Paper TRADE JOURNAL

FEB. 29, 1952

OWE $17,644 IN BACK WAGES . . . Page 12

S. D. WARREN MODERNIZATION . . . Page 20

EFFORTS TO IMPROVE WASTE PAPER INDUSTRY . . . Page 25

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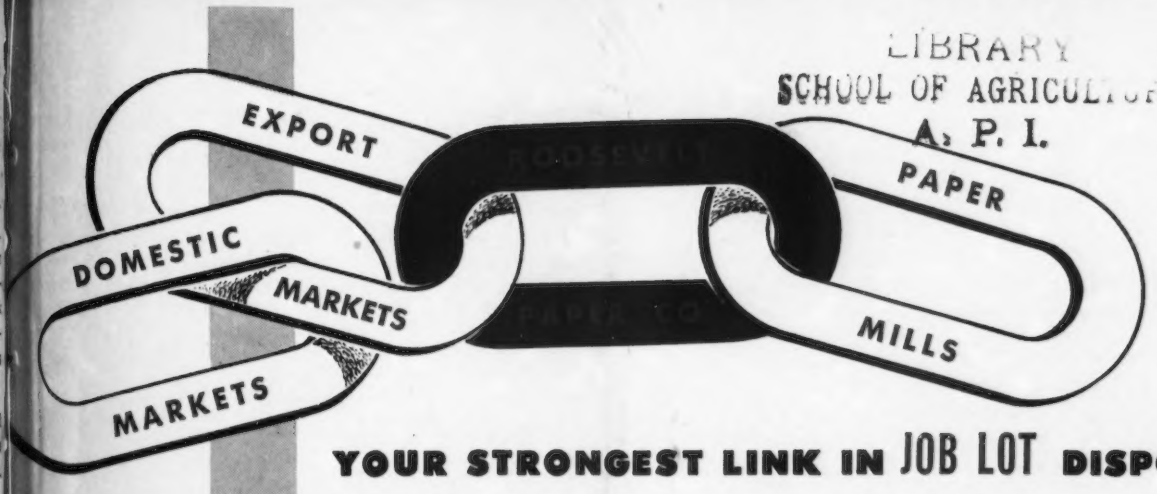


YOUR STRONGEST LINK IN JOB LOT DISPOSAL

your constant market for JOB LOTS

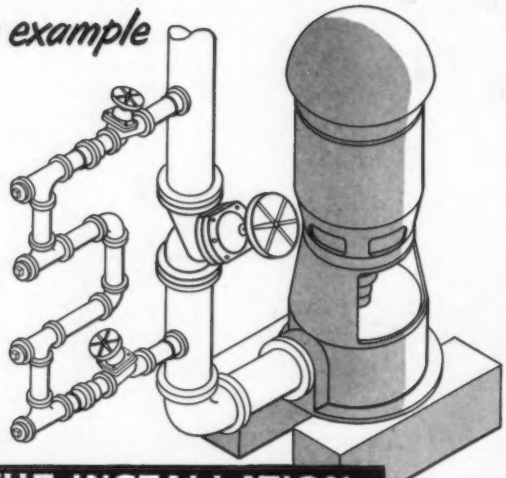
Offset • Bond
Sulphite Converting
Bleached Sulphate
Kraft Converting
Eggshell • Antique
English Finish
Machine Coated
Index • Bristol
Envelope
Writing
Coated
Label • Super
Tag • Mimeo

Strong, creative sales ability plus a modern converting plant with extensive warehousing facilities has enabled ROOSEVELT to solve the job-lot problem for many of the leading U. S. mills continuously. Well-developed domestic and export markets for all grades of paper make Roosevelt your market today—and tomorrow! An organization of Integrity, Ability and Versatility to purchase sub-standard and side-run tonnage in rolls or sheets.

Roosevelt

19TH STREET & WASHINGTON AVENUE
PHILADELPHIA 46, PA.

How's This For Solving a Valve Problem ...on Corrosive Well Water, for example



THE INSTALLATION

On outlet of well water pump supplying plant of Barr Rubber Products Co., Sandusky, Ohio. Sulphur content of water extremely high.

THE HISTORY

Valves formerly used here lasted no more than 6 months. Under constant exposure to severe erosive and corrosive effects, they failed to provide the easy operation and positive seating needed in this service. They required excessively frequent re-packing and seating maintenance.

Problem solved by replacing with Crane Packless Iron Body Diaphragm valves in main line and by-pass. Installed more than a year, they show no corrosion, no effects of service. Operate smoothly, seat tightly, with no maintenance needed to date.

VALVE SERVICE RATINGS

SUITABILITY:	Just what was needed
MAINTENANCE COST:	None to date
CORROSION-RESISTANCE:	No evidence of corrosion
SERVICE LIFE:	Outlasted any 2 other valves so far
OPERATING RESULTS:	Pump shutdowns for valve repairs stopped
PRICE:	Much less than alloy valves
AVAILABILITY:	Stock item in Crane line

THE VALVE

Crane No. 1611 Iron Body Packless Diaphragm Valves featuring separate disc and diaphragm. No packing to maintain; no stem leaks. Neoprene diaphragm used to seal bonnet only. Independent disc with neoprene insert insures positive seating even should diaphragm fail. Also fully neoprene lined valves. Many common and corrosive services. See your Crane Catalog or Crane Representative.

The Complete Crane Line Meets All Valve Needs. That's Why,

More Crane Valves Are Used Than Any Other Make!

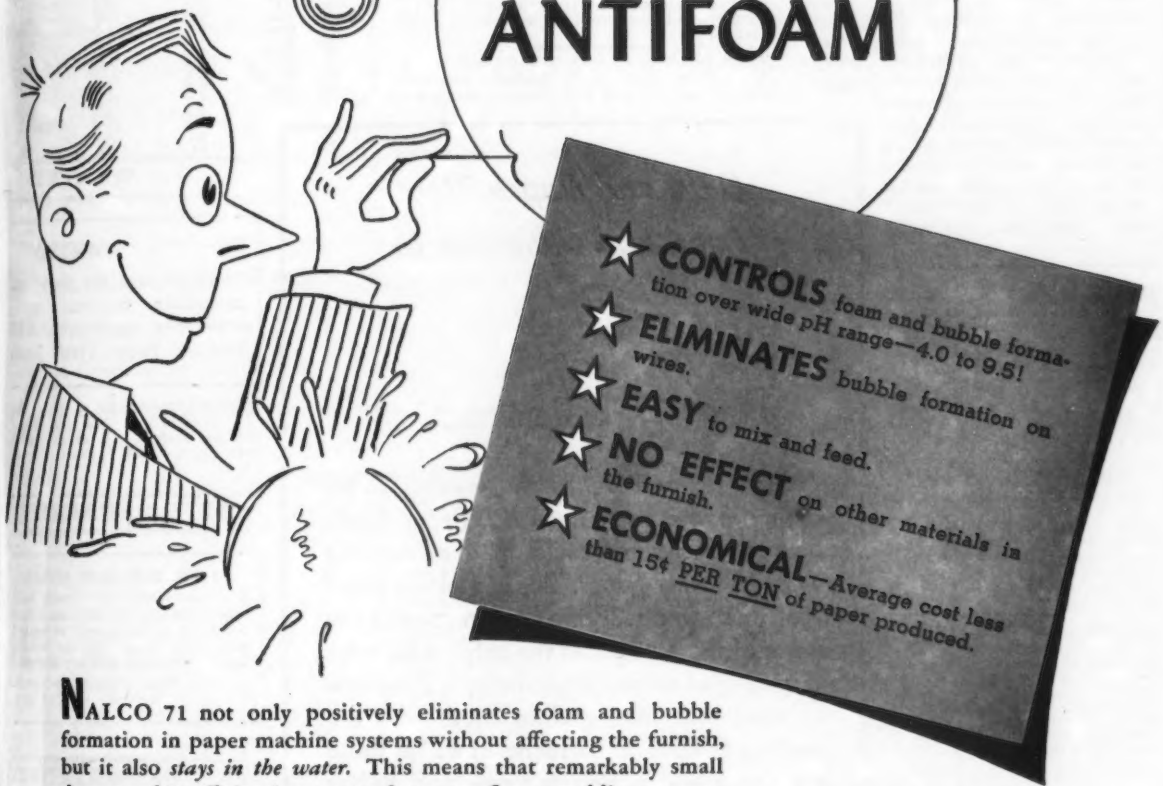
CRANE VALVES

CRANE CO., *General Offices:* 836 S. Michigan Ave., Chicago 5, Illinois

Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

Nalco #71


PAPER MILL
ANTIFOAM
CONTROLS foam and bubble formation over wide pH range—4.0 to 9.5!
ELIMINATES bubble formation on wires.
EASY to mix and feed.
NO EFFECT on other materials in the furnish.
ECONOMICAL—Average cost less than 15¢ PER TON of paper produced.

NALCO 71 not only positively eliminates foam and bubble formation in paper machine systems without affecting the furnish, but it also *stays in the water.* This means that remarkably small dosages of 71 efficiently prevent foam overflows, wadding, uneven caliper and other foam difficulties. Churning of Jordans, action of stock pumps and the flow of stock—the very things that cause foaming in untreated systems—all promote better action of Nalco 71!

Complete information on Nalco 71—and on other Nalco Chemicals for paper manufacturing use will be furnished upon request. Write today for prompt action on a permanent solution for your foaming problems.

NATIONAL ALUMINATE CORPORATION
6221 West 66th Place
Chicago 38, Illinois
Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario, Canada

THE *Nalco* SYSTEM
Serving the Paper Industry through Practical Applied Science

CLEARING HOUSE

FOR BUYER FOR SELLER FOR EMPLOYER FOR EMPLOYEE

HELP WANTED

MEN WANTED—POSITIONS OPEN

We can place—Superintendent Fourdrinier machine mill on manifold, onion skin, bond, sulphite and rag papers; general supt. for pulp and paper mills; manager, supt. and tour boss for mill making papers for con-

PAPER PROCESS ENGINEER

Should have knowledge of paper converting in coating, laminating, cutting, assembling and printing. Desirable to have experience in writing of process sheets for such operations. Can consider educatio perience in paper mill opera similar chemical engineering bly background of mechanic on paper converting machin cation Chicago. Address B care Paper Trade Journal.

PLANT ENGINEER—Opportunit fied graduate Engineer with e perience in general plant engineeri erations in the Pulp and Paper I particularly the kraft process. Addr care Paper Trade Journal.

SUPERINTENDENT for Eastern facturing fine papers. Must be duction manager. State experien Box 52-31 care Paper Trade Journ

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SUPERINTENDENT—Are you good superintendent experience tissue and napkins for $8,000 per ficient experience in all phases of qualify for a manager's position. dress Box 52-37 care Paper Trade

FOR SALE

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1—Roberts Grinder for 4' wood, with stone and 2500 h.p. motor, with controls. New 1947. Used 6 months.
2—Reliance 2500 h.p. slip ring motors, 66 intervals —3 phase—60 cycle—257 r.p.m., with complete controls.
2—500 ton Pulp Baling Presses with pumping units and motor.
ROSS PAPER MACHINERY COMPANY
265 Passaic Street Newark, 4, N. J.
Tel. HUmbodlt 2-2177 F-1

FOR SALE—Cameron 62" & 36" Slitters & Rewinders; 7" Brightwoods. SELLING OUT COMPLETE SET-UP BOX PLANTS. Bargains. Address Box 52-23 care Paper Trade Journal. TF

FOR SALE—Two machine board mill located in New York State, modern, one-story. Factory building goes with property, also water

FOR SALE

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Wrapping and Converting Machines. New or

REBUILT ELECTRI

AC MOTORS (3 ph. 60 cy.)

HP	Make	Wdg	Spd.	Type
400	G.E.	S.R.	450	MT
300	G.E.	S.R.	450	I M
125	West.	Syn.	277	
100	G.E.	S.R.	450	I M
100	Al.Ch.	S.C.	720	ARX
100	West.	Syn.	900	
100	G.E.	S.C.	1750	IK
100	West.	S.C.	1200	CS
75	West.	S.C.	900	CS
75	G.E.	S.L.	575	ITC
50	West.	S.C.	1750	CS
50	West.	S.C.	900	CS
50	Al. Ch.	S.C.	1200	AR
60	West.	S.R.	575	CW
4.50	G F	S.C.	1750	KT
		S.R.	900	MT
	st.	S.C.	1750	CB365
		S.C.	865	
		S.C.	1750	CS

Pulp and Paper Men Read and Advertise in

Paper TRADE JOURNAL

Due to its position as the leading publication in the paper industry, Paper Trade Journal carries more classified advertising than any other paper. This is positive proof that those who read the book recognize the value of these pages as the only medium for disposing of surplus equipment, seeking new or used machines, and to those who are seeking competent personnel as well as those men who are looking for new and better positions.

Prove it to yourself—run a classified advertisement in the Paper Trade Journal and be convinced of its pulling power. Rates are shown below.

WANTED

WANTED

Small or medium paper mi converting business or converting equipment. Add 5236 c/o Paper Trade Jour

WANTED—63 to 66 inch fac winder with rider roll equip ters and trim 60 inch sheet. Addre care Paper Trade Journal.

SALES REPRESENT

STEEL CORE PLUG REPRESEN
Well established commission sale ative covering all mills, on a rela represent manufacturer of compl steel core plugs. Outline territo lines, references and experience.
Paper Core Plug Compa
Kalamazoo, Michigan

OPPORTUNIT

UNEXCELLED OPPORT

For Sales Manager and Convert Foreman, versed in sanitary t purchase an interest and join date plant. Equipment new. particulars, address Box 52-46 per Trade Journal.

RATES FOR CLEARING HOUSE ADVERTISING

HELP WANTED—75c a line. Minimum charge $3.75.
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ABC

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PUBLISHED EVERY FRIDAY

LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 36

Phone: PLaza 7-2370

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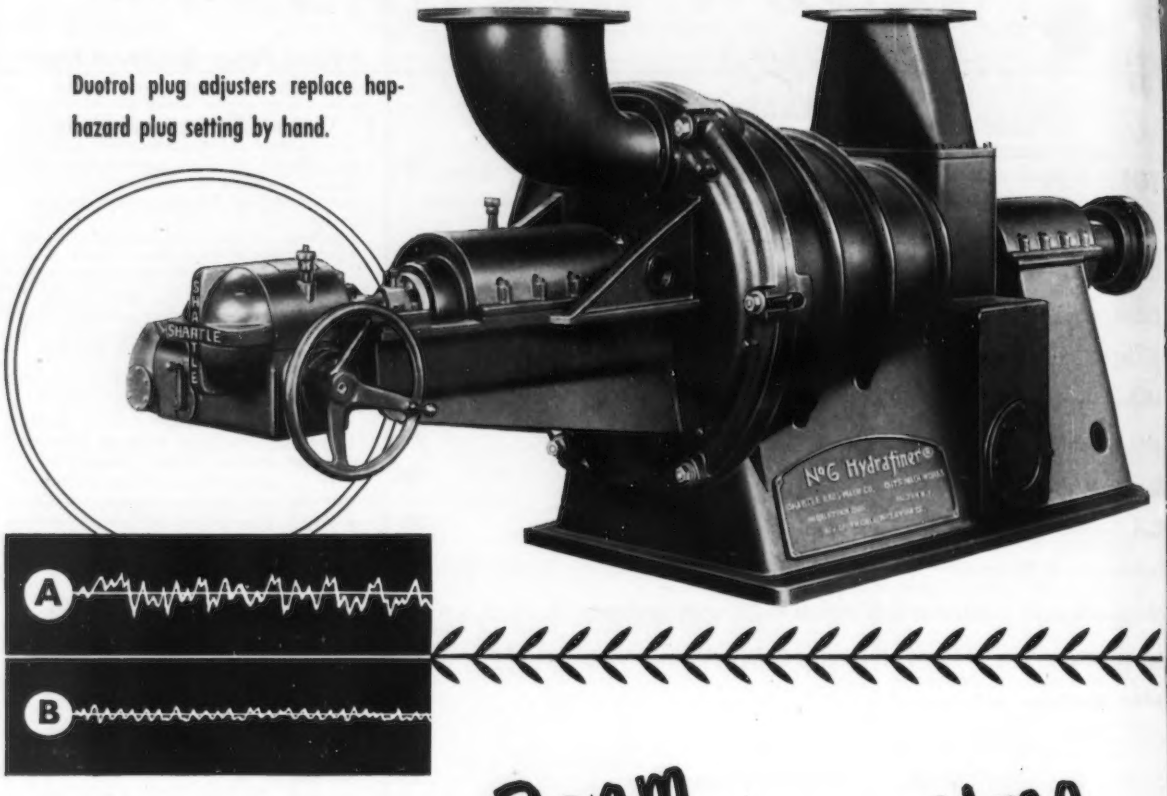
Duotrol plug adjusters replace haphazard plug setting by hand.



Right on the Beam all the time

Resetting the plug of a jordan or conical refiner by hand is a hit and miss operation. Because of fluctuating conditions of the stock flow you get a jagged "treatment" line something like in A above.

Employ a Duotrol* plug adjuster to set up or back off the plug in response to changes in the condition of the stock and you get a "treatment" line like in B above.

Thus you keep the plug setting right on the beam all the time and obtain a uniform refining or jordaning job over the entire cycle regardless of stock fluctuation. In other words, the setting at the control board determines the treatment you want and the treatment you'll get.

Duotrol plug adjusters are standard on all Miami jordans and HYDRAFINERS®. Available for all other jordans and for all conical refiners. Contact Shartle.

SHARTLE BROS. MACHINE COMPANY

MIDDLETOWN, OHIO

*Trade-mark

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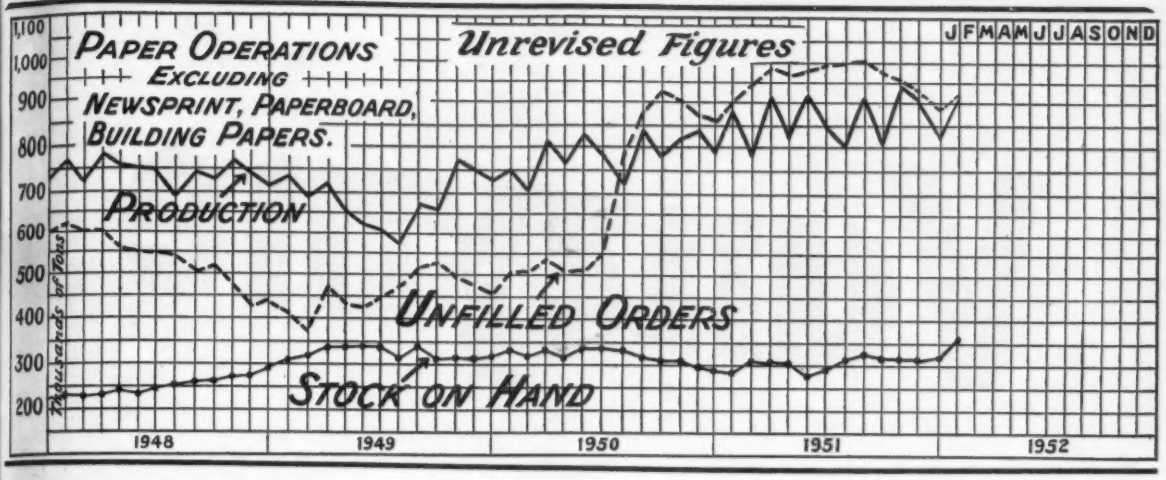
Western Sales Office: Mayer Bldg., Portland, Oregon • Associate: THE ALEXANDER FLECK LIMITED, Ottawa, Ontario
Subsidiary: B-C INTERNATIONAL LTD., Greener House, 66/68 Haymarket, London, S. W. 1, England

OUR BUSINESS



Brief of Important Figures

Source	Production	WEEK ENDING Feb. 16, '52	Jan. 19, 52	Feb. 17, '51
APPA	Paper Production Percent Capacity[3]	96.0	99.3	102.1
	Unbl. Kraft Paper Production Percent	94.7	97.4	99.9
NPA	Paperboard Operating Ratio Percent Inch Hours	87	85	105
		Jan. 1952	**Dec. 1951x**	**Jan. 1951**
APPA	Paper Production* (Except Newsprint and Building Papers) ....Tons	917,000	862,151	892,000
	New Orders ....Tons	963,000	820,265	936,360
	Unfilled Orders ....Tons	935,000	870,769	910,835
	Shipments ....Tons	899,000	863,959	885,000
		Jan. 1952	**Dec. 1951**	**Jan. 1951**
NPA	Paperboard Production ....Tons	903,461	757,914	1,176,679
	New Orders ....Tons	962,138	768,320	1,349,991
	Unfilled Orders ....Tons	405,520	358,720	761,828
	Our Customers Activities Index[1]	**Latest Mo.[c]**	**Previous Mo.[c]**	**Year Ago[c]**
FRS	Manufactures Total Index	226	229	227
	Durable Mfg. Index	278	277	266
	Nondurable Mfg. Index	185	190	196
	Chemical Products Index	303	303	288
	Mfg. Food Products Index	153	162	161
	Printing and Publishing Index	178	183	179
ODC	Magazine Advg.-Printer's Ink Index	357	347	319
	Retail Sales Combined Adjusted Index	387.6	384.2	374.7
	Drug Index	247.0	247.3	241.2
	General Merchandise Group Index	400.1	404.1	399.6
	Grocery and Combination Index	468.0	459.0	426.5
	Prices Index			
BLS	Consumers Price Index[1]	189.1	188.6	178.8
	Wholesale all Commodities	113.5[4]	178.3[2]	175.3[2]
	Wholesale Foods[2]	187.3	188.8	179.0
	Commodities other than Farm Products and Foods[2]	166.9	166.9	166.7
	Wholesale Pulp and Paper	118.4[4]	201.1[2]	189.0[2]
	Purchasing Power of Dollar, Consumers Prices[1]	52.9	53.0	55.9
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	429.4	434.1	426.0
	Unemployment Compensation Initial Claims (M)	1,151	948	1,051
	Miscellaneous Carloadings-Thousands of Cars	1,747	1,524	1,814
	Electric Output (Million KW hr.)	38,459	37,313	35,821
PTJ	Average 32 P & P Common Stocks as of Feb. 23	$35.48	$37.83	$37.98

[1] 1935-39 = 100 Unadjusted Index.
[2] 1926 = 100.
[3] New 6-7 day basis.
[4] New Index 1947-1949 = 100.
[c] For details see APPA Monthly Statistical Summary—January 1951 Estimated Figures.
[*] Latest Month Available on Request.
[x] Revised figures.

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Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, February 27, 1952.

Three topics most generally discussed in Convention corridors last week were probably: (1) what's ahead for paper demand; (2) how much of a cut will second-quarter Scandinavian pulp prices get; (3) the waste paper market.

Paper Consumption VS Consumer Spending

Much of industry thinking is exceedingly optimistic about the 1952 outlook. To this happy group, the present lag is mainly one of inventory adjustment which will be followed by record paper consumption during the third and fourth quarters. Increased Defense spending as the year progresses is back of much of this hopeful attitude.

Composing this group are papermakers and converters. In natural accord are many pulp men and other raw material suppliers.

At variance, are those who theorize that a downtrend is indicated at mid-year; also those who interpret the current market easing as a clear-cut downturn wherein price-paring spreads. (Referred to is a *Wall Street Journal* feature of February 21 which blew up the passing of premium prices to a *scare* that the market is in sad shape, hinting that "the reversal" may be an omen for all business. Of such fabrication is a price-cutting panic made.)

Still others see most segments of the industry getting back to a normalized production; consumers satisfying regular requirements, reducing heavy inventories as required; kraft production catching up on backlogs, and this market shortly in balance. Still unsatisfied is the demand for printing and book papers as heavy advertising programs and new books continue to take peak output.

Estimated by some is that by mid-year a new flow of advertising to stimulate consumer spending will require such volume of book paper that this segment of the industry may be at peak for several months. Electioneering paper usage also may be massive.

Consumer Spending VS Savings

Not least of all the unknown factors, and by far the most important to market futures is not easily resolved. How much of the increased consumer income is going to be spent in buying what industry is producing? How much is going into savings? Will the consumer continue the spending-savings ratio set in 1951 when savings took a sharp rise, or will she be drawn back to the 1950 ratio when savings were 5c out of each $1, spending 86c, taxes 9c; compared with 7c, 82c, 11c respectively for 1951.

The shift reflected a reduced rate of purchasing in a wide range of consumer goods, most pronounced in durables, reports the *Survey of Current Business*, "Annual Review Number." After the drop occurred in the first and second quarters of the year, the rate of spending was relatively constant. Personal consumption expenditures in the last three quarters of the year were about 2 percent below the peak rate of the first quarter, and 4 percent above the like period of 1950. Only in value did consumer purchases for the year increase; in volume they slipped about 1 percent below that of 1950.

The decline could not be attributed to a dearth of purchasing powers, says the *Survey*. Personal income advanced steadily throughout the year, and totaled $251, as compared with $225 billion in 1950. Personal taxes rose by nearly two-fifths to $28 billions, but left disposable income $18 billion higher.

Sharp Rise In Saving

"A corollary to the recent divergent movements of disposable personal income and consumption expenditures" was the notable rise in personal saving: from $10½ to $17 billion last year, which included a net increase of about $11½ billion in holdings of cash and securities, in addition to $5½ billion in less liquid forms.

It is thus concluded that the public generally was not hampered in its retail spending by a lack of ready funds. Reported also by the *Survey* is that the savings rate of farmers tends to exceed the average, and that their rate for the year was much more than proportionate to the increase in personal income; but that the reverse was true of most forms of income whose recipients include a high proportion of large savers characteristically.

Factors Restrain Consumer Spending

Some of the more important factors which restrained consumer spending were named by the *Survey* as the aftermath of post-Korean buying sprees which left consumers unusually well-stocked with merchandise ordinarily bought only infrequently; or left them in depleted financial position with consequent need to replenish savings.

With the continuation of generally plentiful supplies and the stabilization of prices, resistance to price increases became firmer, and postponement of marginal purchases was encouraged.

Expenditures for consumer durables were inhibited by the credit controls effective under Regulation W, with a modest pick-up in outlays for other than autos during the second half of the year following partial relaxation of credit controls.

Also to be recognized is that a significant part of the drop in demand may well represent a longer-term reaction from the high rate of spending for them throughout the entire post-war period, writers of the *Survey of Current Business* believe.

Psychological Factors Abet Saving

Increasingly, market students are coming to recognize the effect of collective civilian thinking on the economy, and to search for psychological factors which influence market trends.

In industrial areas, for instance, there are strong memories of 1930's depression years of want and fear. Fresh also are long months of labor strikes which wiped out the savings of war years. Other cities now booming with Defense industry are strongly populated by foreign elements with strong habits of savings. Fear of insecurity through unemployment and other causes are bound to influence some of these Defense workers to continue the pattern of savings set in 1951. Youth may spend freely, but the mature and middle-aged work for home and security. The confused and fearful mind thus fortifies itself against an uncertain future.

To our thinking, it is possible that the paper industry can count on heavy paper requirements to support sales promotional work and merchandising on a buyer's market. For there is no discounting the fact that the consuming public is reflecting in their collective buying habits a natural confusion about the present as well as the future.

Wood Pulp Prices

Speculation about second-quarter prices for overseas pulps was rife at the Convention. Heard were guesses at a $35 drop from ceilings of $200 for unbleacheds. Some ventured $50. No one had any facts to dispense.

A press report from West Germany on the 25th stated that prices for Swedish woodpulp contracted after April 1 are to be reduced by 20 percent.

The Anglo-Saxons Had a Word For It

Asked how the waste paper market was last week, a reliable broker said it is best described by a word not in good usage.

Consulting Winston's Simplified, we find under its *vulgar* meaning: "Lousy: abundantly supplied."

When it is reputed to take "Wine, Women and Song" to induce sales, with minor emphasis on the song, other smelly adjectives are held to be descriptive and picturesque.

—E.P.N.

Paperboard Production (Tons)*

	Feb. 16 1952	Feb. 9 1952	Feb. 17 1951
Production	214,477	207,274	243,154
New Orders	170,485	239,542	215,033
Unfilled Orders	396,837	438,915	718,490
% of Activity	87	85	105

* Source: National Paperboard Assn.

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President, American Radiator and Standard Sanitary Company

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In these critical days, when "Defense is Everybody's Job" the Payroll Savings Plan is up front with America's defenders. Month after month, in upwards of 21,000 companies, more than 8,000,000 men and women are building a bulwark of thrift dollars. In January, 1951, 3,587,000 $25 Defense Bonds and 1,028,000 $50 Defense Bonds were purchased—the majority by serious savers on the Payroll Savings Plan.

Management is doing its part—in a big way. Hundreds of companies, large and small, are reinstating the Payroll Savings Plan or vitalizing the existing plan by a person-to-person canvass that puts a Payroll Savings Application Blank in the hands of every employee. No pressure is exerted—or needed. In Mr. Mueller's American-Standard plants, for example, the person-to-person canvass added 7,800 more employees to the plan that protects.

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PAPER TRADE JOURNAL

News of the Week

Paper TRADE JOURNAL

Celgar Applies for Forest Management License

A forest management license covering 3 million acres (2 million is claimed to be unproductive land) on the Columbia River watershed is being applied for by a division of the Celanese Corp. of America, Celgar Development Co. Ltd. The area includes narrow strips on either side of the Arrow Lakes and the Columbia River from Castlegar, at the south end of the Arrow Lakes, to Mica Creek, 200 miles north near the top of the Big Bend.

If the B. C. government grants the license, the Celgar Co. will go ahead with plans to construct a fully integrated, $65 million pulp and newsprint mill at Castlegar.

Receive Only One Proposal for New Zealand Mill

The Government of New Zealand has received only one proposal for the private development of a newsprint and milling industry based on the pine forests at Kaingaroa, according to a report by Foreign Trade of the Canadian Government from Wellington.

The proposal has been submitted by a group consisting of a New Zealand company in association with two American organizations, report states. These companies have undertaken to form a company called the Tasman Pulp and Paper Co. to carry out, if necessary, all the construction, including wharf facilities at Tauranga, and the future management of the integrated industrial plant connected with the use of the timber available.

It is understood that the Government is likely to make a decision before the end of this year and a special committe has begun the task of assessing the proposal. The committee consists of the Minister of Forests as chairman, senior representatives of the Treasury, the New Zealand Forest Service, the Ministry of Works, the Department of Industries and Commerce, and two prominent businessmen.

C/N Require "Predetermination"

WASHINGTON, D. C.—Concerns seeking rapid tax amortization through certificates of necessity for expansion of their facilities must now first obtain a pre-determination from Defense Production Administration, of the shortage of facilities in that field, under a revision of procedure that becomes effective March 1.

This is the major change in new regulations covering issuance of Certificates of Necessity which will replace the former provisions.

"The increasingly tight supply of materials has necessitated making a much closer examination of new industrial expansions by DPA, particularly where accelerated tax amortization is requested," Deputy Administrator of DPA James F. King, stated.

"Predetermination" will apply on all construction and permanent installations to cost more than $100,000, and not commenced before March 1, for which certificates are requested, said the announcement.

U. S. Newsprint Report

The total estimated U. S. newsprint consumption for January, 1952 was 460,420 tons compared with 457,685 tons in January, 1951 and 451,102 tons in January, 1950. This is an increase in 1952 consumption of 0.6% over 1951 and 2.1% over 1950.

Stocks of newsprint on hand and in transit at the end of January, 1952 were 49 days' supply for the average of all daily newspapers reporting to the ANPA. This is an increase of 7 days' supply as compared to the end of December, 1951. There were 39 days' supply at the end of January, 1951.

Daily newspapers reporting to the American Newspaper Publishers Assn. consumed 345,315 tons of newsprint in January, 1952 compared with 345,552 tons in January, 1951 and 345,093 tons in January, 1950. There were 4 Sundays in January, 1952 and January, 1951 and 5 Sundays in January, 1950.

Additional C/N

C/N have been certified for $71,540,000 to increase newsprint production. Certificates issued include: Bowater Southern Paper Corp., $51,500,000; Southland, $15,040,000; West Tacoma, $5,000,000.

Pending applications cover Great Northern, $7,000,000; Michigan Paper, $1,500,000; and Crown Zellerbach West Luin, $214,000.

World's First 'Amphibious' Sulphur Mining Plant

From this 200-foot steel barge, shown being launched near New Orleans, Freeport Sulphur Co. will mine defense-essential sulphur in the Louisiana marshland at Bay Ste. Elaine, the first marine project in the industry's history. The portable plant will supply nearly two million gallons of superheated water a day to melt the sulphur deep underground. Next summer, it will be towed 65 miles from Grande Ecaille, where mining equipment is now being installed, to Bay Ste. Elaine and partly submerged in a prepared slip. Production of sulphur is scheduled to start later this year.

Pay $17,644 in Back Wages Owed Under Amended Wage-Hour Law in 1951

Year's Compliance Record Reported

Are the employers in the pulp, paper and paperboard industry generally complying with the amended Fair Labor Standards Act? Does the record indicate that management has a firm grasp of the Fair Labor Standards Amendments that went into effect on January 25, 1950? Recently released statistics on the first full year of operations under the amended Federal Wage and Hour Law show that there is room for improvement.

According to the 1951 annual report of the U. S. Labor Department's Wage and Hour and Public Contracts Divisions, 62 percent of the establishments investigated in this industry during the past fiscal year were found to have violated the Act's minimum wage, overtime pay or child-labor provisions.

"The 1951 record makes it clear that greater efforts on the part of some pulp, paper and paperboard manufacturers would pay off in reduced liabilities for back wages owed employees," points out Wm. B. McComb, the Divisions' Administrator. His report shows that a total of $17,644 in back wages was paid to 204 employees, as a result of the Divisions' activities. This sum does not include amounts awarded by courts to employees who exercised their statutory right to sue for back pay and liquidated damages.

"Although most employers know that the amendments raised the minimum wage to 75 cents an hour from 40 cents, the Divisions found that a sizeable minority of establishments—11 percent of those investigated—had failed to observe this requirement when paying some of their employees," states Mr. McComb.

"Even more extensive were overtime pay violations, found in 60 percent of the investigated establishments. Employers should remember that the amended Act continues to require payment of at least time and one-half the employee's regular rate of pay for all hours worked in excess of 40 in the workweek, except where the Act specifically provides otherwise. What the amendments did was to define the regular rate to include all renumeration for employment except certain specified payments."

Failure to comply with the Act's child-labor provisions was disclosed in 4 percent of the investigated establishments, Mr. McComb noted. The child-labor requirements set a minimum age of 16 for most jobs with 18 as the minimum for occupations designated hazardous by the Secretary of Labor. Employment of boys and girls of 14 and 15 years of age is permitted in a few types of jobs—such as office and sales work—under strict restrictions on hours and working conditions.

The Administrator wants members of the industry to know that the violations found last year were not representative of the compliance record of all employers whose employees come within the provisions of the Act. The Divisions' policy is to make investigations where there is reason to believe that violations will probably be found. Moreover, experience demonstrates that the great majority of employers intend to comply with the Act; in most cases, failures are due to misunderstandings about the statutory provisions.

To assist the pulp, paper and paperboard manufacturers in attaining full compliance, Mr. McComb invites any employer who has questions about the Federal Wage and Hour Law to inquire of the nearest regional office of the Divisions.

Social Security and the Self-Employed

January 1, 1952, was a significant date to the country's 4,600,000 self-employed. It represents the anniversary of their first year of coverage under the amended Social Security Act. It also brings the sole owner or partner in an unincorporated business, face to face with the requirement to report his net self-employment income earned in 1951, on or before March 15, 1952.

Unlike other workers covered by the Social Security Law, within the paper and pulp industry the self-employed does not have his earnings reported by someone else. He does not share the tax obligation with an employer, or have his report submitted for him. The self-employed sales agent, importer, exporter, retailer or wholesaler will be required to report his own earnings and pay his own tax for Social Security purposes. This will be done when he files his 1951 income tax on or before March 15, 1952.

Income from self-employment, subject to certain exceptions, means net earnings derived from a trade or business covered by Social Security. The individual or partner who works for himself must report and pay the tax of 2¼ percent on all such earnings over $400 and up to $3,600 starting for 1951. These net earnings may be from full or part-time self-employment. If, in addition, he has wage earnings from a job covered by Social Security, he reports only that part of his self-employment net earnings which, added to his wages, total $3,600 for that year. If his wages are as much as $3,600 he will not need to report his self-employment earnings. All reports are filed with the local Collector of Internal Revenue.

All types of self-employment in a trade or business are covered by this new law. The few occupations that do not count toward social security protection are farm owners or operators, physicians, dentists, osteopaths, chiropractors, naturopaths, veterinarians, public accountants, funeral directors, architects, professional engineers who work for themselves, and a few others.

Before filing the 1951 income tax return, every covered self-employed person will need a Social Security account number. If he never had a card, or has lost his card, he should get in touch with the nearest Social Security office. Blanks can be obtained at any Post Office and mailed to the Social Security office.

Social Security means a foundation of old-age and survivors insurance protection for the individual and his family. Retirement benefits will range from a minimum of $20 to $80 a month. A man and wife retired at age 65, could receive a total of $120 a month. Survivor benefits in addition to a lump-sum, are provided for the widow at age 65, to the widow with minor children in her care, children under age 18, dependent husbands, and dependent parents. Family benefits in death cases will range from a minimum of $40 to a maximum of $150 a month.

It is important that you know about your new rights under Social Security, as well as your obligations to file your return. This reminder may help you in preparing for your first payment. Local offices of the Social Security Administration have a free explanatory booklet available upon request.

NEW PAPER USES

Quartz Paper for Insulation

Quartz, the crystalline form of silica often regarded as the most perfect electrical insulating material found in nature, has been duplicated chemically in the form of fibers by Glass Fibers, Inc.

The new fiber, in the submicron-diameter size, has been successfully made into a quartz paper, declares Randolph H. Barnard, president of Glass Fibers.

While initial use of the paper will be as a high-temperature nondeteriorating electrical insulating material, it is expected its use in the atomic energy program will be widespread because of its resistance to atomic radiation, Mr. Barnard said. The paper is chemically identical with natural quartz, he added.

Announced defense requirements for a perfect insulating paper have included high temperature needs of more than 1,000 degrees Fahrenheit, low electrical losses at high frequencies and, perhaps most important, absolutely no deterioration when exposed to atomic radiation.

By comparison, Glass Fibers' quartz paper has a temperature resistance up to 3,000 degrees Fahrenheit, provides minimum electrical losses at high frequency and, in extensive tests (reportedly by the Naval Research Laboratories) has proven relatively unaffected by radiation.

On top of everything else, the quartz paper has strategic importance as a replacement for asbestos, obtained in purest form in Africa, and with its high temperature limit greatly surpasses accepted working limits for asbestos, Mr. Barnard declared. Besides, the paper does not break down chemically as is sometimes the case with asbestos, and it is magnitite-free, it was added.

Mr. Barnard sees the quartz paper being used as wrapping insulation on all types of wires, cables and components used in the radiation field, including coaxial cables, magnet wire and wave guides.

In the case of condensers for high-speed, high-altitude aircraft and missiles, quartz paper will make these parts much lighter in weight, thus increasing the working pay load of front-line fighting ships, the industrialist said.

It is believed the paper will have wide use in atomic powered aircraft, submarines, aircraft carriers and warships, as well as atomic artillery, rockets, guided missiles and torpedoes.

Particularly enthusiastic over the development, Mr. Barnard is convinced it is the "most important one in the glass industry since invention of the automatic bottle blowing machine and equipment for manufacturing flat glass."

Quartz fibers, being produced at Glass Fibers' Waterville, Ohio, plant, are available to paper manufacturers only in small laboratory quantities at present, but plans are going forward for volume output.

Basic work and guidance in the development of the quartz fibers were credited to Dominick Labino, 1165 Craig Rd., Maumee, vice-president of the company's glass division.

Mr. Labino joined Glass Fibers in 1946 as chief furnace designer after a number of years with Owens-Illinois Glass Co. in a similar capacity and as a combustion engineer. He later became manager of the Waterville plant and a year ago was elected vice-president in charge of glass manufacturing and development.

Among his other achievements, Mr. Labino was given recognition in 1930 for having designed and built the world's smallest electric motor up to that time. He is well known in art and ceramic circles.

Mexico Increases Production

Shortages of newsprint and other paper in Mexico are expected to be completely eliminated as the result of increased government activity to make the nation self-sufficient in this respect. A new cellulose factory near Reynosa, in the town of Rio Bravo (on the Mexican-U.S. border) has just been inaugurated and test production begun. According to Angel Carvajal, Minister of National Properties, the new plant will use cotton linters available in the nearby Matamoros cotton growing area.

The daily capacity of the new plant, when in full production, was not revealed. However, Carvajal pointed out that only three similar plants in the United States were larger. The new plant is expected to supply all of Mexico's cellulose needs, according to Carvajal.

The Department of National Economy has also revealed that a huge cellulose processing plant will soon be constructed in Temosachic, in the State of Chihuahua, to provide raw material for the country's paper manufacturing mills now requiring increased amounts of this product which, heretofore, has had to be imported and was always in short supply.

According to unofficial sources a group of Mexican technicians, representing the founders of the new plant to be known as Cellulosa de Chihuahua, S.A., are already in Italy negotiating with officials of the large Italian cellulose corporation, Snia-Viscosa, which will have an active interest in the new plant. Mexico will receive technical assistance from the Italians, in the establishment and operation of the plant, the loaning of qualified technical personnel to operate it and teach Mexican workers, and also all machinery required for the new enterprise.

Capital investment in the plant totals 130,000,000 pesos (about $15,046,000), with 25 percent of the capital stock assigned to the Italian corporation for its technical cooperation and for equipment. Balance of capitalization will come from Nacional Financiera which will advance 50 percent of credits needed, while 25 percent has been guaranteed by private investors.

Prime material to be used by the plant will be the heavy pines coming from forest lands controlled by the Ferrocarril del Noroeste, S.A. (Northwest Railway, S.A.) which, incidentally, is one of the principal shareholders in the proposed plant. As a means of saving trees and in keeping with the government's program to save forest lands, it is planned to solely use branches of the pine, leaving the tree in a condition where it can flourish anew.

Technical studies which have been made, however, show that the heavy pine is not suitable for the production of newsprint, and it will have to be used for other types of paper only. The government program of aiding private initiative also envisions the establishment of a large newsprint manufacturing plant in the same region once tests have been completed with wood pulp obtained from rich timber areas of the state. Construction of the newsprint plant will not begin until the cellulose plant is completed.

From associates of the new project, it is learned that production will begin at a rate of 40 tons of cellulose a day. The current plan is to have the plant completed and ready for operation within a period of not more than two years. Aside from the newsprint plant projects in the Chihuahua region also call for an industrial carton manufacturing plant and possibly a wrapping paper plant. The idea is to create a concentrated paper industry in this favorable region.

Once the cellulose plant begins production, it is believed there will be an exportable surplus of cellulose, and this will be sent to Italy in keeping with the agreement offered to Snia-Viscosa.

Consumption of all types of paper, as well as production, as a study of statistics reveals, has shown an upward spiral in Mexico for the past few years. The country has also had to increase its imports, although amounts required were never received, and it is this situation that has led Mexican industrialists to the point where they wish to establish not only sources of supply for cellulose, but also to assure augmented paper production and other products obtained from cellulose.

Aside from newsprint, which has always been in short supply, there is a very heavy demand for wrapping paper in Mexico. Figures released by the department of statistics show that production of this type of paper, aside from slight drops in 1946 and 1947, has increased considerably. Figures for a six-year period show following production of wrapping paper in tons:

1945	42,637
1946	40,207
1947	37,805
1948	44,127
1949	43,789
1950	48,880

Figures for 1951 have not been tabulated as yet, but unofficial reports place production around 55,000 tons. This production will show even greater increases once the paper industry project in Chihuahua becomes a reality. Newsprint users also look to the new source of supply to ease the current tight situation but, unfortunately, the projected newsprint plant will not be in operation before late 1955 at the earliest.

AUSTRALIAN NOTES

The future of paper supplies in Australia is being discussed at the moment with more optimism than for some time past. There has been a fall in some Scandinavian spot prices; tonnage from England has shown improvement; and more sea transport is steadily becoming available.

Shortage of sulphur in Australia is, however, extremely serious. For the current year Australia has been allocated 75,000 tons of U. S. sulphur — about one-third of her annual requirements. Another 75,000 tons will be available from local sources, but there will be a gap of at least some 60,000 tons. By 1956 Australian sulphur needs are expected to reach 400,000 tons (consumption last year was 225,000 tons), and efforts are to be made to secure supplies from local pyrites.

The £28 million Murupura pulp and paper project in New Zealand will be a prospective sulphur user on a grand scale, and Australia can promise her sister Dominion little if any supplies.

The annual report of the Australian Apple and Pear Board states that action has been taken to secure dollars for the importation of plain and oiled wraps for 1952.

Sell Warsaw Paper Box Co.

WARSAW, N. Y. — The Warsaw Paper Box Co. at 99 Linwood Ave. has been sold to Winthrop T. Sergeant of Buffalo and James T. Dougherty of Canton, Ohio, who will continue the 40-year-old business. Price Kinney, owner of the concern since 1921, confirmed the sale. Mr. Kinney is retiring from active business.

Mr. Sergeant will be the new general manager. A provision of the sales contract calls for retainment of the present employes by the new owners.

Paper Corp. Mill Re-Opened

CHEBOYGAN, Mich. — The Paper Corp. of America started its paper mill after being closed for repairs since the Christmas holidays. Over that period of time a large crew of repair men have been busy getting the mill in readiness for opening. One paper machine was placed in operation with the seven o'clock shift on Monday with the other machine to be placed in operation as soon as possible.

Work is progressing steadily on the new wood-plup and chemical plant to be operated by the company, and is being delayed only by slow delivery of machinery.

Alabama Can Triple Pulp Production

Arthur G. Wakeman, executive vice-president and general manager, Coosa River Newprint Co., Childersburg, Ala. stated that Alabama's 19 million acres of forest land are producing only three-tenths of a cord per acre and should produce a cord an acre.

Mr. Wakeman addressed the annual meeting of Group Four of the Alabama Bankers Assn. at Alabama College. Representatives of more than 30 Central and North Alabama banks were present.

The bankers were told that they can help bring greater prosperity to their state by making money and machinery available to farmers who grow trees.

Mr. Wakeman declared that the farmer with a wood lot is a good risk compared to the farmer who doesn't have a wood lot. A wood lot can be a real cash crop to a tree-farmer, he pointed out.

The Coosa River official told how the pulp and paper industry had introduced new wealth to the South, although it was still a comparatively new industry in Dixie.

He said that half of the nation's $5 billion pulp and paper industry had moved South.

Mr. Wakeman pointed out that Southern mills produce 25 tons of newsprint and paper a minute and said there are ten paper mills in the South that cost about $60 million each.

Launches Industry Service Plan

Recognizing as its first responsibility to American business the job of teaching operating management the economics, administration and technology of up-to-date material handling, The Material Handling Institute, Inc., has launched an Industry Service Plan which will use the press, the platform and the conference table to go into the field and work with industrial leaders "on location."

Directing the new MHI Industry Service Plan is George R. Brockway, vice-president, The Rapids-Standard Co., Inc., Grand Rapids, Mich., and a committee consisting of six authorities from equipment manufacturing firms in the materials handling field. The committee's resources of talent consist of specialists from the 78 manufacturing firms comprising the Institute membership.

Principal activities prompted by the MHI Industry Service Plan include: (1) closed workshop-type conferences between users and manufacturers facing common technical problems; (2) articles and other contributions to trade, technical and business publications, designed to give management the benefit of group experience from all branches of the material handling world; (3) local conferences in industrial cities between representatives from each city's leading industries and an itinerant team of authorities on the economic, administrative and technological aspects of material handling; (4) a speaker's bureau to provide presentations on material handling before trade and business associations and technical societies; and (5) reports and surveys for wide distribution to industrial leadership groups.

Cooperating with The Material Handling Institute in its Industry Service Plan will be The American Material Handling Society, the national organization of material handling engineers. Also cooperating will be the vertical associations of manufacturers of material handling equipment. It will be the policy of the MHI program to avoid duplication of the work already being done by several of these vertical groups. The objective will be to coordinate, extend and amplify the total effort.

Already, a survey has been completed crystallizing thought on what industrial management should know before installing or revising a material handling system. Also, the first user-editor-manufacturer workshop-type conference on the subject of bulk material handling will be held in Pittsburgh, Pa., February 28-29.

Object to 7-Day Week Operations

OTTAWA — The National Board of the Lord's Day Alliance has come out in sharp criticism of the Canadian pulp and paper industry for its proposal of a seven-day week of operations, with the Board stating that any plan which allowed full-time operation of the industry would require a staggered system of days off.

At present, the Lord's Day Act provides Sunday as a non-working day and the Board referred to Sunday as "the national weekly rest day." The Board objected to the encroachments of industry on such Sunday rest.

"There would be the loss of the quiet and restful atmosphere of the common day of rest," the Board concluded. "The noise of hammers, the loud voices of the workmen, the staccato sounds of labor, the drone of engines and the rattle and roar of heavy traffic, all heard on the ordinary working day, are not conducive to rest of body or repose of mind."

GOVERNMENT GOSPEL

Canadians Study Packaging

OTTAWA—Since considerable material was lost during World War II through bad packaging and even exceeded losses from enemy action, the Canadian Government is attemping to prevent such losses in the future. In view of the present policy of building up huge stockpiles needed for the defense program, and it is unknown when these might be used since the emergency situation cannot be timed, an important meeting took place here of top level industrial and government executives to discuss the whole problem.

The meeting was headed by John P. Gledhill, president of the Packaging Assn. of Canada, and included representatives of government, private industry and others interested in "defense packaging." The emphasis was on the fact that packaging is becoming extremely important since a billion dollars worth of war goods is now on order from the Department of National Defense.

A general committee of 14 members was appointed to study packaging specifications of the United States and either confirm or amend them, recommending practical methods to properly package the huge quantities of war goods now being stockpiled. Chairman of the committee will be John P. Gledhill and vice-chairman will be L. A. McGinn of Dominion Packaging Ltd., Montreal, Que.

It is understood that a testing laboratory for packaging materials may be set up at a cost of approximately $50,000 to $75,000. Such a laboratory might save the Canadian people millions of dollars because the stockpiling may be for three or four years or more. In addition, the committee hopes to have packaging specifications written right into a manufacturers contract so that goods delivered may be packaged for use immediately or stored for an indefinite time.

A.P.W.

ONLIWON

INDUSTRIAL
TOWELS
TISSUE

Wage Increase for Paper Mill Workers

Approximately 28,000 pulp and paper mill workers will receive $3.6 million in annual wage increases through a Wage Stabilization Board decision, it was announced by the AFL Paper Makers headquarters in Albany, N. Y.

The union said it had received notification from the WSB it has approved a request to establish July 1, 1950, as the base date for determining percentage increases for two blanket agreements covering 44 mills in the Far West and South. For workers in 35 Pacific Coast mills, the decision means fulfillment of a 12½-cent general increase negotiated last spring, the union said, while to workers in nine mills of International Paper Co.'s Southern Kraft Division, it means approval of an 8-cent increase.

The union said the decision is expected to affect wage rates throughout the paper industry, and that it also left the way open for additional bargaining under a regulation which permits cost-of-living adjustments.

Ask Steel Inventory Limitation Be Extended

The Drop Forging Industry Advisory Committee, representing 196 drop forging plants, asked the NPA to extend the 45-day steel inventory limitation contained in existing regulations to longer periods with respect to steel used in the industry's operations.

Committee members declared that, while this inventory is suitable for many other industries, the drop forging industry regards it as unsatisfactory for a number of reasons. These include changes in customer schedules, unforeseen tie-ups in aircraft schedules, irregular steel deliveries, breakdown of dies and hammers, and long periods of time needed to test steels and dies.

The committee suggested that the 45-day inventory limitation may be all right for less than five percent of the industry's plants, which turn out standardized products. It recommended that a 90-day inventory be allowed for carbon and low alloy steel (six percent or less of critical elements), and 120 days for high density and stainless steels.

NPA officials said individual requests would be fully considered in view of the importance of drop forgings in the production of military items, including jet engines, tanks and ammunition.

The committee requested NPA's assistance in obtaining more hot rolled carbon bars and billets. It was pointed out that the industry operated at only 54 percent of its capacity in January, and that more steel is required if it is to prevent further increases in its backlog of orders.

The drop forging industry is a heavy consumer of steel of the same type as shell quality steel, which is being used in ever-increasing tonnages for the production of ammunition.

NPA officials said a recent survey showed the drop forging industry has a theoretical capacity of 300,000 tons of forgings a month. It was indicated that all of the plant expansion programs in the industry are either completed or are underway with prospects that demands for its military items will be met without undue difficulty, providing sufficient steel is made available.

Native Sulfur Meeting

Stocks of sulfur in the hands of producers on January 31, 1952, amounted to 2,851,212 long tons, or an increase of 13,780 tons over the amount on hand as of December 31, 1951, the NPA was told at a meeting with the Native Sulfur Industry Advisory Committee.

The statement was made by a Defense Materials Procurement Agency representative during a discussion of NPA's sulfur limitation order, M-69, which was amended December 29, 1951.

Committee members pointed out that the net gain in stocks should not be interpreted too optimistically because shipments to customers are generally low during January.

The amended order restricts the use of sulfur to 90 percent of the consumption dring the calendar year 1950 and makes it possible for NPA fully to support military and defense requirements for sulfur through issuance of directives to suppliers.

It was generally agreed by Government and industry representatives that M-69 is achieving a balance between available supplies and requirements on the basis of the 90 percent use restriction.

NPA officials said that M-69 was amended to maintain producers' stocks at the 1951 year-end level. If demands exceed the current production rate, NPA said, the permitted use of sulfur will be further curtailed to avoid reducing reserve stocks.

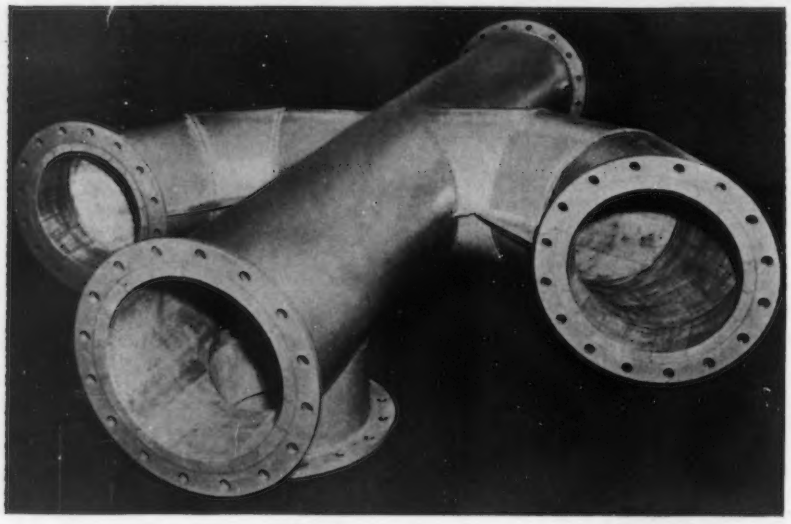
On the basis of October, November and December 1951 production, NPA estimated that the industry is now producing sulfur at the annual rate of 5,158,180 long tons. Production for 1951 totalled 5,278,249 long tons and amounted to 5,192,184 long tons in 1950.

Steel and Copper Supply

WASHINGTON, D. C.—Manufacturers of small compressors have been promised larger supplies of carbon steel, stainless steel and brass mill products for the second quarter, but were told they would get less alloy steel and copper foundry products, meeting last week with NPA.

(Continued on page 34)

New Equipment
Supplies and Materials



Wood-Lined Stock Pipes

Spider-like fitting and the other unusual pipe shapes were fabricated by Michigan Pipe Co., Bay City, Mich., to meet specific service requirements for use with woodlined steel pipe-lines carrying brown stock pulp to the storage system, in one of the South's largest pulp and paper mills making paper for food containers, drinking cups, file folders and other kraft specialties.

Fittings illustrated utilize linings of Douglas Fir encased in an 18" seam-welded steel shell protected against corrosion attack. This combination affords excellent resistance to mechanical shock, hydraulic shock and impact while preventing accumulations of slime, fiber bundle and debris within the pipe lines, it is said.

Gammagage

The Gammagage is now being displayed for the first time following successful plant trials at the Newcastle mill of Fraser Company Ltd., in one of the most important problems facing the operators of kraft mills, corrosion in their pulp digesters.

A special Corrosion project has been undertaken by the Pulp & Paper Research Institute of Canada, finances being provided by 13 Canadian paper companies. In this work, the Institute asked Isotope Products, a new company established in Oakville, Ont., to develop an instrument for very accurate thickness determination. The Gammagage is the result of collaboration between the two organizations.

The new instrument uses the more penetrating Gamma rays, which, far from being stopped by a sheet of paper, will go through many inches of steel. They also will go through several inches of heat insulation, as well and still pick up fine detail on the inside surface of the wall beneath the insulation. All measurements can be made entirely from the outside of digesters, with the further important feature that no shutdown of the digester is required. As soon as the digester is blown, corrosion measurements can be made and danger areas can easily be explored in an hour or two between cooks.

Moreover, measurements are not made merely at single points, but continuously as the measuring head is moved along the outside of the digester. This is possible since the head does not have to make direct contact with the surface and paint, scale and rough surfaces do not worry it. To facilitate these direct readings, the head is mounted on a three-wheel trolley and the measurement is recorded continuously on a portable head recorder.

Both the Betameter and the Gammagage can be used in other industries: The betameter for measurement of plastic, rubber, metal, and other sheet materials, the Gammagage for inspection of pipes, boilers and chemical plant vessels. Both instruments have also valuable applications in the defense field.

Stainless Steel Tube Fittings

A new line of corrosion-resistant stainless steel fittings, for Schedule 5 S and 10 S tubing, has just been announced by The Special Screw Products Co., 5445 Dunham Rd., Bedford, Ohio.

Included is a standard selection of elbows, tees, unions and connectors for tubing sizes up to and including ¾", with couplings for larger diameters handled on special order. The new line embodies the self-centering seat designed to insure a leak-proof, wedge-type seal, even though tube is assembled off center. Another exclusive feature, is the reinforcing Teflon rings that double-seal the seat to further guard against costly, dangerous gas or liquid losses.

Twin Seal Plug Valve

A cast-steel, general twin seal valve is available from Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh 22, Pa.

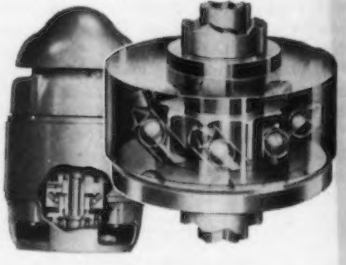
Featuring easy, positive operation, with special applications in pulp and paper industries, the manufacturer claims for it five points of superiority: (1) shuts off vapor-tight; (2) easy to operate; (3) no lubrication; (4) quick opening and closing; (5) no scoring of seats—seats rotate free of body wall.

Write to Kerotest for Bulletin No. TS-50.

Ballomatic Backstop for Vertical Motors

A new method of preventing reversal of U. S. vertical hollowshaft motors has been developed by U. S. Electric Motors Inc., 200 E. Slauson Ave., Los Angeles 54, Calif.

By using balls, the geometric form most ideally suited to provide quick



engagement and maximum strength, U. S. Ballomatic Backstop depends on natural laws to give quick-acting, dependable service. When the motor starts, centrifugal force throws the hardened steel balls out of engagement with the stationary member. When the motor stops, gravity pulls the balls down, and one of them engages between the rotating member and the stationary ratchet, thus preventing reversal. The backstop is designed with a different number of balls and ratchet flutes which multiplies the possible number of locking positions in one rotation, thereby reducing impact and resultant wear to the minimum.

LONG ON EXPERIENCE

For over fifty years, Niagara has been supplying top-quality chemicals to industry. In that time it has achieved a position of leadership as a supplier of chemicals for pulp and paper manufacture.

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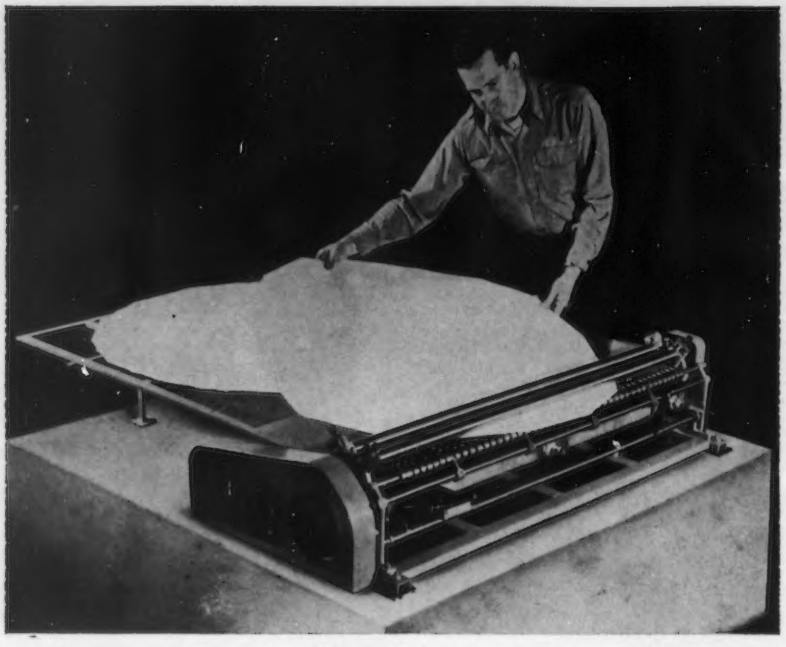


Roll Head Paster

News for newsprint makers is a 48-inch roll head paster recently put on the market by King Sales & Engineering Co., 435 Fulsom St., San Francisco, Calif.

Specially designed and constructed for the Crown Zellerbach Paper Co., Camas, Washington, the new paster speeds up a job that has heretofore been nearly entirely manual, cuts the adhesive bill in half, say the manufacturers.

Used with an attachment, the machine will apply adhesive to cardboard or leather up to a half inch in thickness, in addition to heavy paper. An adjustable feature gives positive control of quantity of glue applied, and also insures uniform application to all parts of the material to which it is being applied, it is stated.

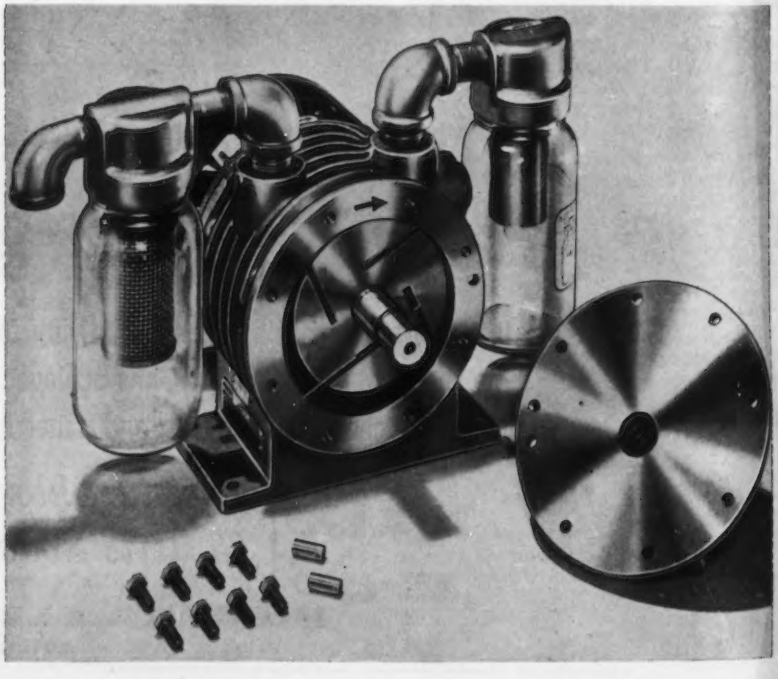
Gears and bearings are all outside of the glue area, and therefore do not undergo the terrific wear customary in machines where glue can get to the bearings and—important at clean-up time—the glue pan slides out for easy cleaning.

Oilless Air Pump

No oil whatsoever is required in the pumping chamber of three air pump models now being built for original equipment installations by Gast Manufacturing Corp., Benton Harbor, Mich. Instead, four vanes of carbon sliding in slots in the rotor lubricate themselves, thus assuring the delivery of oil-free air containing no hot oil vapor or mist.

The design is said to eliminate troubles often caused by over-oiling, etc. Neither grease nor oil contacts working parts in the pumping chamber, and there is no metal-to-metal contact at bearings. Ball bearings are grease-sealed for life, and a ventilated space between bearings and pumping chamber prevents grease from entering the latter. Centrifugal force seats the rotor vanes with constant pressure against the housing, resulting in unvarying performance at full rating. Vanes take up their own wear automatically. Since no oil film is used for sealing against loss of vacuum or pressure, pumping characteristics are unaffected by temperature changes. Construction is simplified. There are no body or end plate spacer gaskets, no shaft seal, and no lubricator.

Three models are offered with oilless construction. All produce up to 20" vacuum, and up to 10 lbs. pressure. Specifications and performance data are contained in Bulletin 152 available from the manufacturer.



Vinyl Plastics

The laboratories of the Watson-Standard Co., 225 Galveston Ave., Pittsburgh 30, Pa., has announced five basic vinyl plastics that are now available.

Referred to technically as "dispersions," these are (1) Organosol; (2) Plastisol; (3) Foamosol; (4) Rigidsol; and (5) Plastigel. Primarily designed for different types of molding, the range of colors and shades and their extreme chemical resistance are unusual factors.

The first of the vinyls, Organosol, is basically used for film coating. The second, Plastisol, is much more varied for use, but at the same time should not be confused with Organasol which contains volatile solvents. It is 100 per cent total solid materials with appropriate stabilizers, pigments and other modifiers added.

Foamosol has the appearance and physical properties of foam rubber, and, of course, can be manufactured in a variety of colors. Rigidsol, primarily used for molding and casting, combines properties of toughness and apparent rigidity that is, at the same time, pliable. Like Plastisol and Foamosol, it offers many uses for industrial applications including gaskets, tubings, hose and flexible bottles. It is reported that Rigidsol piping is now being used in the oil fields of the Southwest on a limited scale.

Plastigel, designed for casting and

extrusion is a unique product. This dispersion is of particular interest to moulders and to amateur sculptors since it may be molded or sculptured and cured in the ordinary kitchen oven, it is claimed.

Sight Flow Indicator

Introduction of the TRIN-VUE Sight Flow Indicator has been announced by Trinity Equipment Corp., 472 Westfield Ave., East, Roselle Park, N. J.

The TRIN-VUE is designed for checking the flow of a fluid in piping systems and for visual examination of the fluid in the line. Two windows located on opposite sides are designed to permit maximum visibility and examination of the fluid. Windows are

sealed in the unit by using of O-Ring gaskets and Truarc retaining rings, an innovation of sight glass construction which permits a tight, positive seal, made tighter the greater the pressure or vacuum applied. Since there are no bolts to be adjusted, pressure on the glass is equally distributed, and there are no uneven stresses to cause glass failure or leakage under temperature or pressure changes. A perfect seal at 3 lbs. continues without failure at higher pressures up to 2000 lbs., it is stated.

Features of the TRIN-VUE include its positive seal, light weight, tamper-proof construction, and new type welded design; pressure of vacuum uses do not cause leaks.

Units are available in a range of special materials. Sizes range from ½" to 4".

3-Aminopropanol

American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y., has made 3-aminopropanol available in trial lots for the first time for evaluation in the chemical and allied industries.

Chemical properties of 3-aminopropanol are similar to those of other amino alcohols having primary amino and hydroxyl groups. However, the three-carbon separation between the two groups results in behavior more typical of the individual groups than is found in currently available amino alcohols, it is stated.

It is suggested by the manufacturer that this product be investigated for use in the synthesis of soaps and other surface active agents, dyestuffs, pharmaceuticals and resins. New Product Bulletin No. 25 describing its properties and experimental lots of 3-aminopropanol is available.

Fortified Rosin Size

A new grade of fortified rosin size for the paper industry is announced by Hercules Powder Co., Paper Makers Chemical Dept., Wilmington, N. J.

Called 'Dry Pexol, Grade 240', the new size was developed for use in unbleached, semibleached, and colored papers and boards. For these papers, it is said to give papermakers not only the usual economies of Pexol fortified sizes but, in addition, the economies of low brightness rosin.

Mills using the fortified rosin size report substantially lower size cost per ton of paper and paperboard, it is stated. The fortified size can be handled with same equipment that is used for conventional sizes.

NEW LITERATURE

Department of Commerce, Bureau of the Census, Washington 25, D. C. Bulletin, "Import Public Bulletin." Contains minor changes in Schedule A, effective November 17 and 18, 1951, a Statistical Classification of Commodities imported into the United States, August 1, 1950 edition.

Dow Corning Corp., Midland, Mich. Bulletin, "DC Anti Foam A, the Silicone Compound for Killing Foam in Aqueous Systems." Technical and sales copy. . . . Technical data sheet G14-9962, "DC 996 Silicone Electrical Insulating Varnish." Supplies properties and applications of this product as an impregnating varnish for coils, motors, transformers and other electrical equipment exposed to high operating or high ambient temperatures, and humid or corrosive atmospheres; "Dow Corning 993," also a silicone impregnating varnish; "Dow Corning 935," an electrical insulating varnish for coating glass cloth and sleeving; "Dow Corning 710, 710R, and 710G," heat-stable and inert lubricating oils; "Dow Corning 550 and 550R Silicone Fluids," special purpose lubricant high temperature oil bath; BG-2, "Dow Corning Silicone Greases," lubricants serviceable at extreme temperatures; "Dow Corning Valve Seal A and No. 11 Compound," for the lubrication of control valves, plugcocks, packing glands, universal joints; "DC 801, 802, and 804"; Dow Corning Silicone Resins as vehicles for formulating heat and weather resistant coatings; "Dow Corning Resin XR-129G," an invisible, fast-curing, durable water repellent for masonry; Silicone-bases Water Repellent Treatments For Masonry," a brief summary of the properties expected of masonry water repellents based on Silicone products; Sinicone Notes, Ref. 1044-a, "Decetex 104," water repellent treatment for synthetic fabrics.

Eberbach & Son Co., Ann Arbor, Mich. Booklet, "Announcer of Scientific Equipment," No. 52-1-45. Features Brookfield Synchro-lectric Viscometers, Refractometers, Voltboxes, etc.

Esso Standard Oil Co., 15. W. 51st St., New York 19, N. Y. Booklet, "Oilways, February, 1952." Vol. 18; No. 8. Features: "Westinghouse Comes Out on Top"; "Hot News"; "Protection — American Style" — the story of Sylvania Div., American Viscose Corp. with flow chart showing basic steps in manufacture of cellophane.

The Howe Scale Co., Rutland, Vt. Catalog No. 11, "Howe Scales." Specifications and illustrations of scales, trucks, and weightographs.

Pittsburgh Plate Glass Co., 609 Union St., Ashland, Ohio. Bulletin, featuring "Tree Seedlings to Kleenex." The growth of Kimberly-Clark Corp. for the last 79 years.

Reliance Electric and Engineering Co., 1076 Ivanhoe Rd., Cleveland 10, Ohio. Bulletin D-2311, "The Most Effective Method of Power Transmission Serving Industry Today." Illustrates application of this equipment to seven typical manufacturing operations in as many industries.

Shenango-Penn Mold Co., Centrifugal Castings Div., Dover, Ohio. Brochure, "Shenango Non-Ferrous Centrifugal Castings." Of special interest is a cylinder, centrifugally cast, precision finished and grooved to specification, for use in manufacture of corrugated paper. . . . "Shenango Centrifugal Castings of Meehanite Metal Ni-Resist and Special Iron Alloys." Features a centrifugally cast 220-groove Fourdrinier wire cloth warp roll of alloy iron, shown during precision grooving operation at Shenango.

Syntron Co., Homer City, Pa. "A Condensed Catalog of Syntron Equipment." Illustrated.

U.S. Department of Labor, Bureau of Labor Statistics, 341 Ninth Ave., New York 1, N. Y. Report, "Pulp and Paper Mills: Case Study Data on Productivity and Factory Performance." Products for which production manhour requirements are presented include newsprint; writing paper; kraft wrapping paper; paper board; folding boxboard, and specialty papers, such as waxing and fruit wrapping papers. Obtainable free.

Sulphur for United Kingdom

WASHINGTON, D. C.—Crude sulphur totaling $4 million was authorized for procurement for the United Kingdom by the Mutual Security Agency (ECA) this week. The sulphur will be obtained in this country.

1951 Modernization at S. D. Warren Co.

Cumberland Mills, Maine

The S. D. Warren Co., manufacturers of soda pulp and plain and coated book papers, first began operation at its Cumberland Mills plant in 1854. The site on the Presumpscot River (outlet for Sebago Lake) had been used for industrial purposes, principally concerned with lumbering and milling, for many years prior to this date. When Samuel Dennis Warren purchased the mill properties at this location he realized that the potential hydraulic power and the ample supply of suitable water for paper manufacturing processes were assets which would permit a natural growth in production facilities. This growth has been little short of spectacular. Many cycles of expansion and modernization over the past century have changed Cumberland Mills from an operation producing 1½ tons per day of rag papers to its present daily capacity of 240 tons of hardwood soda pulp and 425 tons of finished papers, both plain and coated.

The most recent cycle of plant modernization began during World War II. The major steps accomplished during the years 1945-50 included (1) complete rebuilding of five of thirteen Fourdrinier machines with four of these units equipped for machine coating (2) the installation of the first high pressure recovery boiler for burning black liquor from the soda process (3) a completely new high pressure steam generating plant fired by either pulverized coal or oil (4) additional steam turbine generating facilities (5) the addition of two 9-ton digesters and the replacement of four others (6) extensive changes to the pulp wood handling equipment including new barking equipment and new wood chippers and screens (7) the addition of two new high speed coating machines (8) the addition of two 145" super calender stacks.

As a further step in this development, work was started in late 1950 on a complete replacement of the soda mill's pulp washing, screening, and bleaching facilities and the addition of a lime kiln to the causticizing cycle. This has likewise necessitated an expansion of facilities for filtering process water. All of this work was completed in late 1951 and resulted in an increased soda pulp production from 175 tons to 240 tons daily.

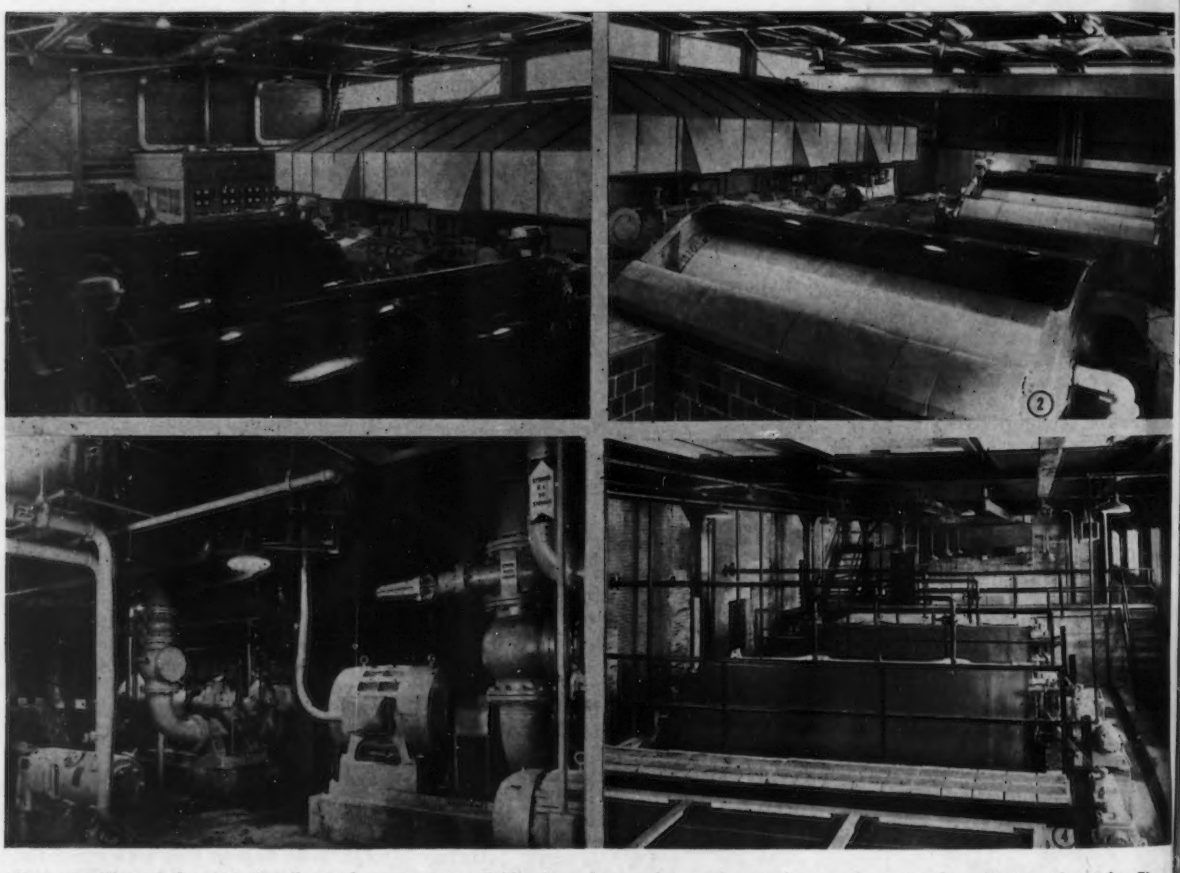


Figure 1.—View of the operating floor taken across top of bleach washers and toward control room. Brown stock washers on the right. Figure 2.—View of the operating floor showing bleach washers; brown stock washers under hood in background. Note operator at operator's console. Figure 3.—A section of ground floor under brown stock washers showing black liquor pumps and air compressor. Figure 4.—View of filtered water plant Waco filters in the foreground.

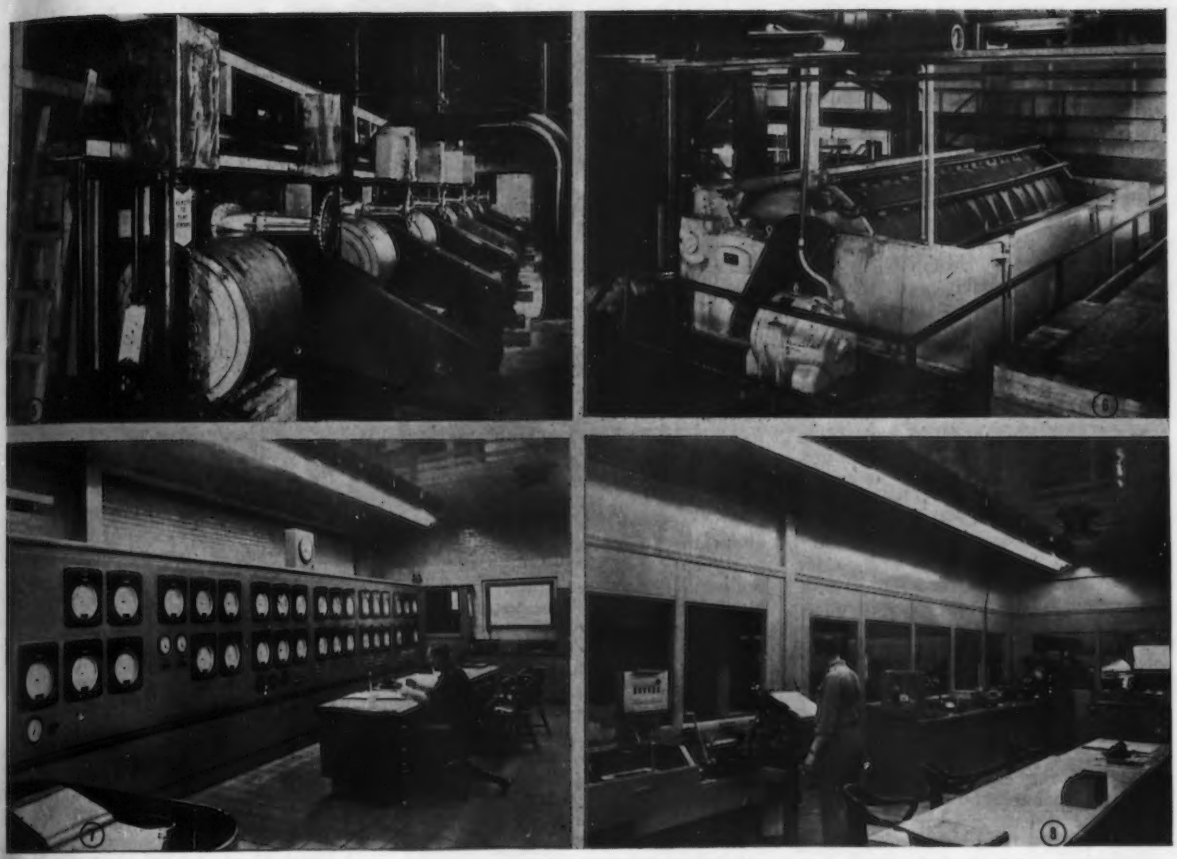


Figure 5.—Battery of six centrifugal screens in screen room. Figure 6.—Valveless decker in screen room. Figure 7.—Main instrument panel located in the control room. Figure 8.—View of the control room showing pulp testing equipment.

In order to maintain operation during construction it was necessary to erect new buildings to house the process equipment. This presented the opportunity to concentrate and centralize the pulp mill units, which hitherto had been rather remotely located, into a compact and efficient manufacturing group. New buildings have been erected to house (1) the pulp washing and bleaching operation (2) the lime kiln and (3) the filtered water plant.

The new pulp washing and bleaching building is adjacent to the existing digester building. For its foundation, approximately 200 tons of steel H columns were driven to refusal to an average depth of 35 feet. The building addition is 70 ft. wide by 105 ft. long by 90 ft. high and consists of a steel framework with brick panel walls. The structural steel in this building totaled 370 tons; the building walls 400,000 bricks. The roof and all floors are concrete. Within the building are housed all of the equipment and auxiliaries incidental to the pulp washing and bleaching operation.

Pulp Washing

Stock is pumped from an existing controlled-dilution blow tank to a set of vibratory deknotters at the main operating floor sixty feet above ground level. The deknotters feed directly into a line of three 8 ft. diameter by 16 ft. face vacuum filters with customary interstage repulpers. Stock flow and liquor dilution flows are automatically controlled and measured. Liquor and water shower flows are manually adjusted through remote operated valves. All of these controls together with the individual filter speed controls, auxiliary gauges, push buttons, ammeters, etc. are concencentrated on an operator's console control cabinet. The weak, intermediate and strong black liquor seal tanks are located outside of the building; all other tankage is contained within the building walls. Space has been allowed for the addition of a fourth washing stage if warranted at some later date by increased production rates. The pulp leaving the last washing stage falls directly into a 40 ton high density storage chest.

Pulp Screening

From the storage chest pulp is pumped with controlled dilution to a battery of six centrifugal screens located in an adjoining building. Rejects from these screens are handled over three 14-plate flat screens arranged in series. The screened stock is thickened on a 6½ ft. diameter by 16 ft. face valveless decker and discharged into a tile storage chest preparatory to bleaching. The white water from the decker is returned to another tile storage chest for use in dilution. The high density storage chest dilution controller, flow meters, valveless decker speed controller, chest level indicators, auxiliary gauges and pushbutton stations are all located on a control panel for the screen room operator.

Pulp Bleaching

From the tile decker storage chest, stock is pumped through a consistency regulator and a variable speed volumetric stock meter to the bleaching operation. This operation is carried out in three stages: Chlorination, caustic extraction, and hypochlorite. Again provision has been made for the later addition of a fourth stage. The interstage vacuum washers are 8 ft. diameter by 16 ft. face and are located on the main operating floor in parallel with the brown stock washers. These washers are all set in tile vats. Chlorination is carried out in two 16 ft. diameter by 48 ft. high tile-lined towers with chlorine water added to the pulp flow in a rubber lined mixer ahead of the tower inlets. The agitator elements in these towers are also rubber covered. The towers are arranged for parallel upward flow with

discharge launders near the top. These towers provide for a total of 90 minutes retention time at rated production. Chlorination is carried on in these towers at 3 p.rcent consistency. After passing over the chlorination washer the stock drops through a double shaft mixer where caustic is added and into a 14 ft. diameter by 37 ft. high tile-lined caustic tower providing 120 minutes retention at 12 percent consistency. Stock flow is downward and discharge is accomplished by a steel scraper assembly and twin discharge screws. These screws deliver into a dump chest equipped with screw type agitator. From this chest the stock is pumped over the caustic washer, from which it falls, through the hypo mixer and into the hypo tower. This tile lined tower is 17 ft. in diameter by 37 ft. high and provides 200 minutes retention at a consistency of 12 percent. The arrangement of mixer, tower and dump chest and the mechanical agitating and delivery equipment are the same as for the caustic tower. After a final washing on the third (hypo) vacuum washer the stock passes through a consistency regulator and is pumped at 3½ percent to mill storage.

All gauges and controls for the bleaching process are placed on operators' console cabinets opposite the brown stock washing consoles so that control of the entire process is concentrated in one relatively small area. Here the operator can manipulate washer speeds, dilution volumes, press roll loadings, etc., and the push buttons for all motor driven auxiliaries. He likewise has a visual record of power input to essential motors and the flow rates of all dilution lines.

An area of the operating floor is enclosed for use as a control laboratory. Housed in this enclosure are facilities for making all conventional pulp, liquor and bleach tests. Included in the equipment are a sheet machine, a pilot beater, an electric furnace and a freeness tester. Also within this enclosure is the main instrument panel where recorders and indicators for the entire process are concentrated. This panel is 6 ft. 8 inches high by 28 ft. long and contains 42 separate instruments as well as push button stations for the common auxiliaries such as fans, water supply pumps, etc.

The entire building is under a system of forced ventilation providing fresh filtered air, heated as required. Intake and discharge ducts for this system are all of stainless steel construction. About ten tons of stainless steel sheet were used for this purpose. The brown stock washers are provided with a continuous hood of asbestos board construction and with fans exhausting to the outside. The bleach washers are individually hooded with porcelain lined covers; these exhaust to atmosphere.

Power for the plant is brought in at 11000 volts from the mill distributing station on an overhead lead-covered cable to two 1500 kva unit substations located centrally in the building. Because of the corrosive atmosphere prevalent within the building the unit substations as well as the seven 440 volt motor control centers are housed in two pressurized rooms of tile construction provided with filtered and heated air. Motor feed circuits and all control wiring are rubber covered cable with neoprene jacket. All AC motors are totally enclosed fan cooled; the DC variable speed washer and agitator drives are forced ventilated with clean air.

Lime Kiln

Because of its size and the proximity of the location to adjoining buildings, the placing of the kiln upon its foundation was a major engineering problem. The foundation could only be approached from one end. It was necessary, therefore, to build a steel track of 36″ I beam sections above the foundation and a steel sled to move each of the first two kiln sections along the track from the loading point to its final position. Each section of the kiln was moved to location on a low bed and was then handled onto the sled by two cranes. This operation is shown in one of the accompanying photographs. The concrete foundations were poured over piling driven approximately 35 ft. to refusal. The building housing the kiln consists of a steel framework with brick panel walls and precast concrete roof at the feed and firing ends, and corrugated asbestos siding and roofing along the body of the kiln.

The kiln itself is 8′6″ and 9′0″ in diameter by 170 ft. long and was selected on the basis of a capacity of 75 tons per day of kiln product when feeding precipitated calcium carbonate as a slurry containing approximately 45 percent moisture. Estimated fuel consumption under these conditions is 10,000,000 Btu per ton of kiln product. The kiln is equipped with the usual auxiliary gas engine drive, forced and induced draft fans, slurry feeder, exhaust dust collection system, and control instrumentation. The kiln is to be fired with Bunker C fuel oil delivered to the site either by rail or truck.

Dewatering of the lime mud prior to calcination is to be done on a 40″ by 60″ continuous centrifuge complete with control instrumentation. The burned lime is conveyed to an agitated primary slaking tank and then pumped to a conventional lime slaker. Make-up lime from an existing storage bin is measured through a feeder into the secondary slaker.

Filtered Water Supply

In order to insure an adequate supply of filtered process water for the bleach plant, it was necessary to install a new filter plant. The process demand is 10,000 gpm. It was decided to erect a plant of 15,000 gpm capacity to allow for expansion and to immediately provide a flow of 5000 gpm into the present filtered water system as a booster.

A new 42″ pipe line about 200 ft. long was laid across a portion of the river bed to provide a gravity flow to the new filter plant. A screen house is located at the intake to this line to screen out coarse material, leaves, etc. The filter equipment and pumps are housed in a new building of concrete, steel and wood construction. A concrete storage basin is included in the basement of an adjoining building. A total of 900 cu. yds. of concrete was placed in this construction.

Filtering is accomplished by means of three Waco filters each 6′ 6″ diameter by 14 ft. face set 75 percent submerged in concrete vats. These filters are of a pre-coat type using pulp as a filtering medium and employing a 45 x 40 mesh traveling wire 14 ft. wide. The pre-coating cylinder for each filter is 16″ in diameter. Each wire provides 435 square feet of filtering area. The speed of the three filters is automatically controlled by the level of water in the clear water storage basin. Motor driven pumps are provided to deliver to the bleach plant and to the mill system. The pump acting as a mill booster is valved to permit its use as a spare for the bleach plant.

Principal Contractors and Equipment Suppliers

Design

Bleach plant and lime burning plant, J. E. Sirrine Co., Greenville, S. C.

Filter plant, S. D. Warren Co., Boston, Mass.

General Contractor

Foundation, building and installations, Ellis C. Snodgrass, Inc., Portland, Maine.

Sub Contractors

Brick masonry, C. H. Gailey & Sons, Portland, Maine.

Tile linings, Stebbins Engineering and Manufacturing Co., Watertown, N. Y.

Reinforcing and structural steel fabrication, Bancroft & Martin Rolling Mills Co., So. Portland, Maine.

Steel tanks, Bethlehem Steel Corp., Bethlehem, Pa.

Piping, Hartwell Co., Inc., Providence, R. I.

Heating and ventilating, C. J. Merrill, Inc., Portland, Maine.

Stainless steel fabrication, Portland Copper & Tank Works, So. Portland, Maine.

Elevator, Westinghouse Electric Corp., Elevator Division.

Black liquor tank insulation, P. S. Thorsen Co., So. Boston, Mass.

Electrical, S. D. Warren Co., Boston, Mass.

Kiln firebrick lining, Vincent Takacs, Martins Creek, Pa.

here's a blue chip investment

that can't miss paying good dividends

Have you recently studied the advantages in changing from 50% liquid caustic soda to 73%? A number of Columbia-Southern customers have made the change and in every instance the results have proved conclusive: A HIGH PROFIT RETURN ON EVERY CARLOAD OF 73% CONSUMED.

Here's an actual case study of three typical Columbia-Southern customers who made the change.

Customer	Cost of 50% liquid	Cost of 73% liquid	Per Cent of Savings	Total $ Savings per year	Cost of equipment and installation necessary to effect such savings	Return on Investment First Year
A	$ 68,240	$ 65,390	4.2%	$ 2,850	$2,650	108%
B	704,600	669,500	5%	35,100	3,500	1003%
C	171,800	164,500	4.3%	7,300	2,055	355%

Cost figures are based on market prices and freight rates effective January 1, 1952

As you will note from the study, the cost of the equipment and installation necessary for this profitable changeover is more than offset by the first year's savings. The small investment earns big dividends.

It will pay you to investigate today the extra profits that may be yours by making this change in your purchase of caustic soda. There is no problem in securing the diluting equipment. The system has been thoroughly tested and proved by over 10 years actual experience in applying high grade 73% caustic soda.

Write today. We will assign one of our technical specialists to discuss your individual case and to make recommendations.

COLUMBIA-SOUTHERN
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SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY

EXECUTIVE OFFICES: Fifth Avenue at Bellefield, Pittsburgh 13, Pennsylvania

DISTRICT OFFICES: Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Houston, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis

Equipment

Vibratory deknotter, brown stock vacuum washers, bleached stock vacuum washers, foam breaker, chest and tank agitators, mechanical equipment for bleach towers and dump chests, stock meters, flat screens, valveless vacuum filter, Improved Paper Machinery Corp., Nashua, N. Y.

Building crane, Manning, Maxwell & Moore, Inc., Bridgeport, Conn.

Insulation, transite pipe and siding, Johns-Manville Sales Corp., New York, N. Y.

Concrete roof slabs, Lastik Products Co., Pittsburgh, Pa.

Rotary stock screens and drives, Trimbey Machine Works, Glens Falls, N. Y.

Flat screen plates, Union Screen Plate Co., Fitchburg, Mass.

Pumps, Ingersoll-Rand Co., New York, N. Y.; Warren Steam Pump Co., Warren, Mass.; Worthington Pump and Machinery Corp., Harrison, N. J.

Air compressor, Ingersoll-Rand Co., New York, N. Y.

Valves, Walworth Co., New York, N. Y.; Crane Co., Chicago, Ill.; Grinnell Co., Providence, R. I.; Record Foundry & Machinery Co., Livermore, Pa.; Kennedy Valve Manufacturing Co., Elmira, N. Y.; Fisher Governor Co., Marshalltown, Iowa.

Consistency Regulators, DeZurik Shower Co., Sartall, Minn.

Instrumentation, Foxboro Co., Foxboro, Mass.

Pipe, Grinnell Co., Providence, R. I.

Saran lined pipe, Saran Lined Pipe Co., Ferndale, Mich.

Wood lined pipe, Michigan Pipe Co., Bay City, Mich.

Rubber lined pipe, B. F. Goodrich, Akron, Ohio; U. S. Rubber Co., New York, N. Y.

Electric motors, Westinghouse Electric & Manufacturing Co.; General Electric Co., Schenectady, N. Y.; Reliance Electric and Engineering Co., Cleveland, Ohio; Allis-Chalmers Mfg. Co., Milwaukee, Wis.; The Louis Allis Co., Milwaukee, Wis.

Motor Controls, Allen Bradley Co., New York, N. Y.

Transformer station, Allis-Chalmers Mfg. Co., Cleveland, Ohio; General Electric Co., Schenectady, N. Y.

Laboratory beater, Valley Iron Works Co., Appleton, Wis.

Laboratory sheet machine, Noble & Wood Machine Co., Hoosick Falls, N. Y.

Waco water filters, mat stock chest agitators, Improved Paper Machinery Corp., Nashua, N. Y.

Lime kiln and auxiliaries, Allis-Chalmers Mfg. Co., Cleveland, Ohio.

Lime feeder and gate, Omega Machine Co., Providence, R. I.

Refractory linings, General Refractories Co., Philadelphia, Pa.

Centrifugal filters, Bird Machine Co., South Walpole, Mass.

Lime slakers, Dorr Co., Stamford, Conn.

Oil line, The Ric-Wil Co., Cleveland, Ohio.

Lime handling conveyors, Link Belt Co., Chicago, Ill.

Adequate Supplies of Waste Paper

Supplies of waste paper are adequate and should remain ample throughout 1952, the Waste Paper Dealers Industry Advisory Committee told the NPA.

Dealers said at today's meeting that the most important problem facing the industry is that of getting enough business.

In a discussion of the paper industry in general, NPA said it is considering modifying Order M-72 (Chemical Wood Pulp), but aims to retain restrictions on the usage of white pulps. The committee saw no objection to such contemplated action.

The committee also discussed methods of recognizing wet strength paper and board waste which are difficult to handle and process. An NPA spokesman described an experiment with a "Waring mixture" into which a small quantity of suspect paper is fed. After running the mixer for two minutes, most paper samples are entirely chewed up, but if it is wet strength, particles remain, he said. Thus the suspected paper can be separated easily from other waste mixtures.

The committee heard a report on mill inventories. It showed that all mills have ample supplies of waste paper on hand and cannot take on any more at present.

Waste paper dealers reported no difficulty in obtaining baling materials and equipment, though balers themselves are difficult to get. NPA pointed out that it has given priority assistance to obtain balers to those who manufacture paper and paper board from waste.

Workers Get Paid Holidays

MUNISING, Mich. — The Wage Stabilization Board has approved four paid holidays a year for hourly rated employes of the Munising Paper Co., it was announced recently by M. S. Ryder, regional WSB chairman.

Employes of the paper company will receive eight hours straight time pay for each of the four days, and these holidays will be considered days worked in computing weekly overtime pay, the Board ruled.

The decision was based on WSB Regulation 13, which permits approval of fringe benefits which do not exceed prevailing industry or area practice as to amount or type.

The petition asking WSB approval of the four paid holidays was filed jointly by management of the Munising Paper Co. and representatives of locals 87 and 96, AFL.

Decision of the 12-man tripartite Regional Board was unanimous.

A similar petition asking approval of four paid holidays for workers at the Escanaba Paper Co. also was approved unanimously by WSB.

Quality Waste A Must

History will probably record as one of the most important meetings of "Paper Week" the waste paper deinking meeting under the chairmanship of J. J. Forsythe.

This meeting attended by over 100 almost equally divided between waste paper dealers and consumers took its hair down on the rapidly declining quality of high grade waste paper and its effect on papers made therefrom.

The mills outlined the economic and goodwill losses, while the dealers discussed the problem from their point of view.

The formal papers presented by Mr. Kirkpatrick, Mr. Goodwill and Mr. Nadelman covering the seriousness of the loss, means of identification, and possible avenues of correction follow.

The dealers pointed out that they were not sure what caused the troubles, how the offending materials could be identified and if they could, how these deleterous materials might be eliminated.

Several suppliers of coatings and adhesives spoke on their efforts to modify their products so that they might be removed in the deinking process.

After some three hours of discussion a small committee was appointed to develop an organization to sponsor a research program to handle these materials, to work out means of identification, a central laboratory for testing new materials, and to plan an educational program among the producers of waste paper.

The waste paper dealers through their Waste Paper Institute assured the consumers of their utmost in cooperation.

EDITOR'S NOTE: We have had the discussions, everyone knows of the problems, now is the time for prompt action. With losses running over $2 million annually, a permanent full-time organization is in order. A sizable budget is indicated for the long range outlook shows that the problem will grow worse rather than better, unless we do something, not next year, but *right now.*

Cooperative Effort Can Improve Waste Paper Quality*

F. C. Goodwill

Mill Manager, St. Regis Paper Co.

During the past few months, whenever two or more users of waste paper talked together, the conversation usually sounded something like *"You* got troubles! . . . Let *me* tell *you mine!"*

It soon became apparent that everyone had at least one thing in common — trouble. The situation came to a boil and resulted in a meeting of representatives of consumer mills at Kalamazoo on September 27, 1951. For the benefit of those who did not participate in the meeting, a resume seems in order. Those present represented 12 mills consuming a total of 30,000 tons per month of the book and ledger grades of waste paper. More mills have since added their support. It is felt that this is a gauge of the seriousness with which the problem is regarded. The discussion that took place was not limited to any single aspect since among the group were mill managers, superintendents and purchasing agents, as well as technical men.

Out of the discussions came these conclusions:

1. That the consumers alone could not solve the problem;
2. That a revision of grade standards and probably the introduction of subdivisions in some categories were indicated;
3. That a program of general education as to what constituted undesirable materials was in order.

To get the program under way, a committee of three, consisting of a technical man, a production superintendent and a mill manager was agreed upon. This committee submitted an outline of its plan of operation to the top management of all mills that had expressed an interest in the program and requested approval. The approvals and assurances of support were immediately forthcoming.

The aid of the Deinking Committee of TAPPI was solicited to carry out the matter of general education on troublesome materials. This committee agreed to act as a clearing house for all information that was submitted. It also made arrangements for this meeting today.

On the matter of grading and for purposes of a general discussion of what was thought to be a mutual problem, attempts were made to arrange for a meeting between representatives of the Waste Material Dealers Association and the committee representing the consumers.

It was encouraging to learn of the dealer representation that was to be present here today. That there should be a lack of interest on the part of the dealers is inconceivable since it is, after all, the dealers' product that will become subject to increasing rejection on the part of the users unless the present situation is improved.

This Is Contemplated

As troublesome materials become known, they will be traced to their source through the dealers.

THEN—If the material can be altered or another substituted, the producer should be encouraged to make the change.

OR—If no change can be made but experiments indicate that the fibre can be reclaimed by using a different deinking process, then a market can probably be found for the waste, provided the paper containing the troublemaker is sorted out and baled separately.

FINALLY—If no change can be made and the fiber cannot be reclaimed by different treatment, there is only one alternative—burn it!

In any case, it must be kept out of shipments to mills as it has been proven that only a small amount of a troublemaker means spoilage of a lot of paper when the waste containing it is converted to pulp.

In some instances, the bookbinder-publisher-printer will be able to get cooperation from the supplier of the troublesome material. For example, some manufacturers of hot-melt resins for bookbinding have changed their product so that it is alkali-soluble. In another case a large printing firm changed from a troublesome latex to an alkali soluble adhesive when it found it could not guarantee to keep flying pasters out of its waste.

To come back to the matter of grading. This might perhaps be more properly called "sorting" since in the past the type of fiber determined the grade but today fiber is less important than the processing to which the paper has been subjected. For example, label stock to which a special synthetic adhesive has been applied, or posters printed with fluorescent inks. That dealers have been confused is not to be wondered at since often what has been "meat" to one customer, has been "poison" to another. For the time being at least that must be worked out with the individual customers. However, better packing must come into being or a dwindling market will result.

When it is said that dealers must work out their packing problems with the individual consumers, the thought was that the consumers could ease the lot of the dealers and help themselves by instituting more uniform processing methods.

Whether deinking operations have kept pace with the times is very much open to question. A lot of hocus-pocus has existed in connection with something that is essentially nothing but a laundering operation and a thorough airing and exchange of ideas seems to be in order. For instance, isn't batch operation preferable to continuous in that it offers greater flexibility of treatment? . . . Screening is one phase that seems to have been sadly neglected. . . . Washing is all too often inadequate. . . . Centrifugal cleaners can be made much more use of, etc. A modern deinking plant should be as well equipped and operated as a pulp mill instead of being the "hell-holes" that they have been all too often—and some still are.

Of course, the problem is not going to be solved over night for, as Perry pointed out so clearly in his article,[2] the situation has come about because of technological advances and technology is not standing still. Also there is a lag between any change and the effect of it being apparent to waste paper users.

This is a rough outline, but it is hoped that it does point out that a concerted cooperative effort is required and, if adhered to, can improve the situation. It should be said that there has been no intention of fixing "blame" on any group. In fact, "blame" can only come in for consideration if the move fails, and if there is a continuance of the interest that has been shown to date, it does not seem that there can be anything but success.

* Presented before the TAPPI Waste Paper Meeting, Hotel Commodore, New York City, February 18, 1952.

[2] "Quality Waste Papers" appearing in the January 4, 1952 issue of PAPER TRADE JOURNAL.

Deinking Mills Dilemma*

W. A. Kirkpatrick
Tech. Dir., Allied Paper Mills

James A. Wise
Production Mgr., Kalamazoo Paper Co.

In the face of dwindling forest reserves, the use of paper and paper board and wood pulp products is steadily increasing, both on a per capita basis and as the result of a startling rate of increase in our population. Today there are insufficient standing timber resources to justify more than two or possibly three new pulp operations in this country; and Canada and Scandinavia are both faced with similar outlooks.

Currently operating wood pulp operations have had to adopt extensive and carefully planned reforestration programs in order to insure pulp wood for future use and means and methods are being continuously sought to use less desirable species. This latter program has met with some success and may be counted on to supplement our available supplies of wood pulp fairly substantially for certain purposes in the future.

By far the most effective "ace-in-the hole" the paper and paper board manufacturers have in view of the present and future unquestioned shortages of vital fiber is the use of waste papers. Roughly, the reclaimed fiber used in these industries amounts to nearly 35 percent of the total fiber used or approximately 7 million tons annually. This staggering figure can be readily comprehended when it is pointed out that it represents about 10 million cords of wood.

Were the use of reclaimed fiber to be discontinued or even curtailed for one reason or another, the shortage of paper, paper products, paper board, regenerated cellulose films and fibers, etc., would create hardships beyond imagination to an economy which has its very foundation set deep in the supporting structure of these products.

The use of reclaimed fiber may be roughly classified in two major groups. The first in terms of tonnage would, of course, be that which supplies the millions of tons to our tremendous paper board production. Without the use of waste paper in board production, the packaging of goods and materials would face a crisis and the distribution economy would collapse in short order. Moreover paper board has supplanted in substantial measure the use of scarce steel in many directions and is doing a very creditable job. A return to the use of steel containers would further aggravate the imbalance that currently exists between the supplies of steel available and even the normal demand for the commodity, while under our current program of rearmament and sustained production of civilian goods, a reversion from paper board to steel would be a calamity.

Fortunately the problem about to be discussed concerns the major user of reclaimed fibers to only a minor extent, but to the second user of reclaimed fiber, those who deink and bleach the waste for the production of white paper, the problem is a very real one. Stated in a few words, the deinking mills, who annually reclaim and use about 600,000 tons of fiber from waste paper, are facing the possibility of losing this source of fiber completely because of the inclusion of deleterious materials in the waste which cannot be satisfactorily removed by any known method and which, if allowed to proceed in process to the finished product, results in one which is inacceptable to the ultimate consumer. If the mills who use deinked and bleached paper stock were to discontinue the use of this fiber and depend entirely on the available supplies of virgin wood pulp, the scarcity of printing and writing papers would be beyond belief; moreover, there is no possible means whereby mills using virgin pulps exclusively could take up the slack. Prices would rise, unemployment in the country's fifth largest industry would be staggering and if wood pulp production were stepped up in an effort to meet the increased demand, our forest resources would diminish at a rate which would shortly result in the government taking over control of the wood cut quotas.

What more specifically are the deleterious materials coming through in waste pape rand just what is their effect on the economic use of this commodity?

For a while in the early years of the past decade, it was felt that the greatly increased use of ground wood in publication printing would present an impossible hurdle. Technologically the problem was met in three ways. The items containing high percentages of ground wood were segregated by printers and waste material dealers and often used in the production of lower grades of paper and, of course, also in paper board. Sorted grades containing 10 percent to 20 percent of ground wood were deinked at low temperatures and the ground wood portion of the furnish was bleached by peroxide, and in this manner after a mild hypochlorite bleach usable, in fact very fine, bleached fiber containing some ground wood was produced; thirdly, by the chemical process of chlorination with gas the lignin was dissolved from the ground wood portion of the furnish and subsequent hypochlorite bleach resulted in a fine bleached cellulose fiber, one which in some respects was superior to virgin pulp. Thus it is seen that one phase of the problem was met and adequately handled.

The second and more serious phase of the problem concerns the inclusion in higher grades of waste paper of materials which cannot be removed by any known method. These materials generally can be classified as thermoplastic or rubber-like, mostly very inert chemically, but possessing the unfortunate characteristic of getting through the conventional deinking and bleaching system right along with the desirable fibers.

The plastic materials were introduced because of their adhesive properties, as moisture or greaseproof barriers, or, in certain cases, as surface treatments to enhance appearance and improve scuff resistance. The first example to come to general notice was the use by several large national magazines of a rubber-like binding material which holds the signatures together as a body and the body in turn to the cover. This use replaced animal glue and for the publisher it had many desirable properties. This same adhesive likewise found wide acceptance as a padding cement. Unfortunately, when going through the deinking process, this adhesive melts and balls up and subsequently deposits itself all along through the paper making process ruining wires and felts and finally coming through as a black or colored gummy material in the finished product. It is conservative to say that this material cost the paper industry upwards of two millions of dollars the first year it was widely used. To the credit of the great DuPont organiza-

* Presented at the TAPPI Waste Paper Meeting, Hotel Commodore, New York, February 18, 1952.

tion it must be said that once they learned of the difficulty, they went to work and developed a satisfactory substitute for the adhesive which *would dissolve* in the deinking process.

One factor which some people find hard to understand is that as little as two pounds of rubber-like thermoplastic material can cause to be unusable 100 tons of otherwise satisfactory fiber. Things like scotch tape, flying pasters made with rubber, heatseal labels, vinyl coated covers and labels, etc., all present a problem. It is not suggested that any waste materials dealer, no matter how diligent, could ever sort all of these out, but what we do ask is a program of cooperation and mutual recognition of the problem.

A typical example of what can be accomplished by cooperative effort was the case of the binding adhesive mentioned above. Another which comes to mind involved cutouts from bread wrap end seals. One mill has encountered these three times at a cost of about $15,000 each time. The last one occurred on stock received by truck late at night and immediately used. By the time trouble was detected, one hundred tons of pulp were practically worthless. These end seals have a coating of a plastic wax together with a rubber-like material. Tracing back the load of waste, it was found to have originated at the Marathon Corp. It took only a telephone call to receive their assurance that this waste would henceforth be burned rather than allow it to reach the *ordinary* channels for waste paper.

Similarly many label manufacturers, when told of the troubles encountered when heatsealing waste is received by paper mills, have offered to burn this waste.

Actually, the percentage of waste papers containing deleterious materials is very small, but its effect on the economy of the deinking mills is tremendous. They *must* be eliminated and *can* be eliminated. The story must be told to those in a position to help. These are the printer, publishers and paper converters. It is important to them whether they buy papers containing reclaimed stock or not that our supply of fiber be not jeopardized. It is earnestly hoped that a basis can be found without delay for a program which will correct this serious situation. There is a lot at stake!

Identification of Troublesome Materials in Deinking Systems*

A. H. Nadelman[1]

Objectionable materials are discovered in ever increasing quantities in systems designed for the deinking and reworking of old paper stocks. An objectionable material in this sense may be defined as any foreign substance appearing in the finished sheet after normal deinking and reworking procedures, or as any substance decreasing the efficiency and continuity of operations by forming accumulations in or on any portion of the deinking system, stock preparation system, or machine and machine system. The vastly expanded usage of synthetic polymers in adhesives, coatings, laminated products, and inks makes some systematic approach to the identification of trouble makers in the deinking process highly desirable in efficient mill operation.

Occurrence of Troublesome Materials

Potential trouble makers are frequently discovered when dirt specks or blemishes are seen in handsheets formed from laboratory deinking trials, using equipment and processes designed to duplicate mill conditions. A constant check on raw material sources by this method can often prevent introduction of objectionable materials into the system. If not discovered in laboratory experiments, the materials may first be noted in the finished sheet, again occurring as dirty or colored specks in the sheet. This condition is frequently accompanied by the accumulation of floating agglomerates or gummy deposits on the walls of chests or vats in the system, on the wire of the paper machine, on doctor blades in the press section, or on the first drier section on the paper machine.

Once a troublesome material has been discovered in any of the places mentioned above, identification of the offender becomes important, for it is only after identification that corrective measures can be taken. Once the identity of the foreign matter is established, procedures may be set up for the elimination of the trouble. Certain grades of waste paper can be excluded from the process. Arrangements may be made with converting plants or waste paper dealers for scrap segregation, or for a minor process substitution to eliminate the offending material. In the case of trouble makers occurring within a mill on internal broke, process adjustments may cure the difficulty. In some cases, an alteration in the deinking process may prove to be beneficial. In all cases, however, identification is necessary if adequate corrective measures are to be taken promptly and efficiently.

Methods of Identification

As mentioned in TAPPI Standard T 445 sm44, "Identification of Specks and Spots in Paper," visual inspection of the spot is often helpful, and frequently sufficient in itself. Increasing the power of the eye with a hand lens or microscope greatly extends the use of this visual approach. With this system, micromanipulation or other mechanical means may be used for the isolation of foreign materials occurring in sheets.

Before attempting removal of the spots, a few simple tests are often beneficial. For instance, immersion of the sheet in carbon tetrachloride will often show intense black or brown bleeding around the spots. This is usually an indication of the presence of asphaltic materials from laminated sheets or Gilsonite, a component in certain gravure inks. Pale colors may result from the presence of paraffin or microcrystalline waxes. An exception to this rule must be made in the case of certain "blown" asphalts. These materials may be oxidized to a point where they are no longer soluble in carbon tetrachloride.

Dark scale from the deinking system is frequently soluble in dilute hydrochloric acid, applied as a spot reagent. The method for the determination of iron particles in paper or paperboard disclosed in TAPPI Routine Control Method RC-53 is quite useful in estimating rust or iron in the finished sheet.

Colored inks are frequently detected by visual inspection alone under the microscope. Black spots suspected of being ink may be moistened with methanol. The methanol will dissolve the blue toner usually associated with these inks, leaving a faint blue fringe around the spot. Carbon blacks without toners are usually soft and friable, smearing or smudging under the pressure of a thumbnail or microscope probe.

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* Presented at the TAPPI Waste Paper Meeting, Hotel Commodore, New York, February 18, 1952.

[1] Member TAPPI; Professor of Pulp and Paper Technology; Western Michigan College; Kalamazoo, Mich.

Synthetic or natural polymers may occur as dark rubbery spots, easily deformed, yet resilient. Certain other polymers causing trouble in deinking systems may appear as resinous materials of a harder nature. Identification of these spots or of accumulations of these materials collected from the deinking or machine system is one of the problems frequently encountered in current deinking practice. This usually requires isolation of some of the material in question.

Identification of Polymers

A rough determination of the physical properties of the isolated material is an effective first step in the identification process. If the material seems to be rubbery in nature, procedures outlined in A.S.T.M. Standards on Plastics *(1)*, "Identification and Quantitative Analysis of Synthetic Elastromers" are usually sufficient for qualitative analysis of elastomers.

If further identification is necessary, or these procedures are not specific, a rough determination of specific gravity is often useful in limiting the possibilities. A simple procedure for this purpose consists of using kerosene, water, and a salt solution of given density for determinating the range of specific gravity of the sample. As a precaution, it is frequently helpful to add a wetting agent to water or aqueous solutions so that misleading conclusions will not be drawn on the basis of samples "floating" due to the surface tension of the reference liquid.

In the case of clear samples the index of refraction may frequently be determined microscopically by the methods described by Chamot and Mason *(2)*. This involves the use of reference liquids with the microscope.

Solubility of the resinous material in a series of organic solvents is also helpful in limiting the possibilities. Excellent charts for determining the significance of data dealing with these physical properties are included in the Modern Plastics Handbook *(3)*. This reference is also a good source for the significance of many of the chemical tests which may be applied to plastic materials.

Chemical Tests

If an identification has not been made on the basis of tests previously mentioned, a more extensive chemical investigation may be necessary. It is desirable to avoid this procedure since the samples available are usually heavily contaminated with interfering materials. If a reasonably uncontaminated sample is available, or can be obtained by the use of suitable solvent separation and purification, the procedures given by Shaw *(4)* provide an excellent systematic scheme for identification, plus a number of charts and spot tests which are extremely useful even when the systematic procedure is not rigorously followed.

Summary

Increasing quantities of undesirable materials find their way into deinking systems with current developments in converting and paper manufacturing techniques. Identification of these compounds is frequently necessary before steps can be taken to eliminate the problems they may cause in the deinking or papermaking process. A workable approach to this problem is outlined, and specific source references are presented as an aid in this identification.

Literature Cited

(1) "Identification and Quantitative Analysis of Synthetic Elastomers," A.S.T.M. Designation D 833-46 T, American Society for Testing Materials, Philadelphia, Pa., 1946.
(2) Chamot, E. M., and Mason, C. W. Handbook of Chemical Microscopy, 2nd ed., John Wiley & Sons (1938 and 1940), especially vol. 1: 358-384.
(3) Modern Plastics Encyclopedia, Plastics Catalogue Corporation, New York, N. Y., 1951.
(4) Shaw, Ind. Eng. Chem., Anal. Ed., 16, No. 9, 541-549 (Sept. 1944).

Selected Abstracts of Papers Presented Before Annual Meeting of TAPPI

THE PREPARATION AND USE OF CHLORINE ACTIVATED SILICA IN PAPER MILL WATER TREATMENT

A. E. Griffin and M. S. Cornish

The activation of sodium silicate with chlorine on a continuous basis has been investigated and found successful. Saturated chlorine water is added to full strength sodium silicate. The combination is air mixed and aged in the same chamber. The activated silica is removed from the reaction chamber by an ejector. The water used to operate the ejector serves as dilution water. Activated silica thus prepared has been used to replace a glue formula in the operation of a Sveen-Pedersen saveall for one year.

OZONE PURIFICATION OF WATER

Victor Hahn

Advances in ozone technology and new commercial availability of large-size ozone generators, have combined to spur research in industrial ozone applications. An extremely powerful oxidant, unique in that it consists only of oxygen in active form, ozone is finding many new uses in chemical oxidations, in water purification, and in the treatment of industrial wastes.

Ozone decomposes to ordinary oxygen in storage and therefore must be generated by the ultimate user at his own plant. Air or oxygen is compressed, dried, and passed through a special type of electrical discharge to form ozone.

Ozone has long been used as a germicide in drinking water, particularly in Europe. Recent developments have shown it to be an extremely effective means of removing tastes, odors, and color from water. As a result, large ozone plants to improve water quality have been installed in the municipal water systems of Philadelphia, Paris and other cities.

A new ozone process for the destruction of phenols in industrial wastes appears to be the most efficient and economical means yet devised for reduction of phenol concentrations to the very low values required by governmental stream standards. In other industrial waste applications ozone is being used for oxidation of mercaptans in liquid waste and for treatment of sewage gases to prevent atmospheric odor nuisance.

THE OPERATION OF AN OCO WATER SYSTEM ON A BOARD MILL'S WHITE WATER

J. Howard Wright

The OCO water system installed at no. 2 board mill of the S. Austin Bicking Paper Mfg. Co., consists of a plate and frame filter, a slurry pump, and filter-aid feeder.

Segregated felt shower water is given primary sedimentation treatment followed by a pass through plate and frame filter along with a controlled amount of filter-aid (diatomaceous earth). The clarified white water is reused over and over as felt shower water under 105 to 110 pounds pressure.

A closed white water system is approached. This gives way to foam problems. Microorganism control is required.

Heat savings and chemical savings are noted.

Under normal operating conditions, a throughput of 110,000 to 130,000

gallons per 24 hours can be handled during one filter cycle.

ACETYLATION OF CELLULOSE

R. C. Blume

While cellulose acetate has been produced from cotton for nearly 50 years, wood pulp has been an important raw material for this industry only within the past 15 years. One of the important factors retarding the development of wood pulp for this use has been the difficulty of evaluating its suitability for acetylation.

The problem of acetylating pulp evaluation has now been separated into two distinct parts: (1) processability in acetylation and (2) cellulose acetate quality. The first of these can be measured objectively and rather simply by the laboratory engaged in pulp development using the techniques discussed in this paper. The evaluation of cellulose acetate quality is more suitably carried out by the textile, film, or plastics industry.

The test to be described evaluates the acetylatability of pulps in terms of (1) over-all reaction rate. (2) the rate of degradation of the cellulose acetate being produced, and (3) the rate of disappearance of filter plugging particles from the acetylation mixture. These factors are determined accuratedly by periodic examination of the acetylating mixture during the later stages of an isothermal, sulphuric acid catelyzed, low consistency acetylation reaction.

The utility of the method is demonstrated by its application to the study of several alternative processes for the preparation of acetylating pulps from aspen. This work disclosed that products from prehydrolysis-sulphate and ammonia-base sulphite pulping of aspen acetylated with equal ease provided the proper combination of bleaching steps are chosen.

PURIFIED HARDWOOD PULPS FOR CHEMICAL CONVERSION. I. ASPEN SULPHITE AND PREHYDROLYSIS—SULPHATE PULPS

R. M. Kingsbury, J. S. Martin, and E. L. Keller
F. A. Simmonds,

The production from aspen of purified sulphite and sulphate pulps suitable for chemical conservation, especially acetylation, was studied at the Forest Products Laboratory. The work on sulphite pulps was done in cooperation with the Forest Products Division of the Michigan College of Mining and Technology.

Aspen pulps were made by the ammonia-base sulphite process, using a liquor relatively high in free acid, and by the prehydrolysis-sulphate process, using only a water hydrolysis. Purification involved hot and cold alkaline extractions and oxidation with both sodium hypochlorite and chlorine dioxide.

The sulphite pulp, obtained in a

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yield of 51%, had alpha-cellulose and pentosan contents of 87 and 5.1%, and a viscosity of 37.4 cp. when dispersed at 0.5% concentration in supriethylenediamine. This pulp was chlorinated and oxidized mildly with sodium hypochlorite. One portion of the oxidized pulp was extracted with a hot, dilute solution of sodium hydroxide and the other portion with a cold, concentrated solution of sodium hydroxide. Both batches were then oxidized with chlorine dioxide. The yield of pulp purified by hot extraction was 37.7%. The alpha-cellulose and pentosan contents of the purified pulp were 94.4 and 1.5%, and its viscosity was 30 cp. The yield of pulp purified by cold extraction was 44.4%. The alpha-cellulose and pentosan contents of the purified pulp were 96.3 and 0.3%, and its viscosity was 22 cp.

The prehydrolysis - sulphate pulp, obtained in a yield of 41%, had alpha-cellulose and pentosan contents of 92 and 2.8% and a viscosity of 37.7 cp. It was chlorinated, and one portion was given a hot alkaline extraction, and the other, a cold alkaline extraction. The second portion was oxidized with chlorine dioxide to give a yield of purified pulp of 38.2%. The alpha-cellulose and pentosan contents of the purified pulp from the second portion were 97.3 and 2.0%, and its viscosity was 18.4 cp.

The pulp given the hot extraction was divided, and one batch was oxidized with sodium hypochlorite to give a pulp yield of 37.6%. The alpha-cellulose and pentosan contents of the purified pulp were 94.7 and 2.2%, and the viscosity was 12.5 cp. The other batch was treated with chlorine dioxide to give a pulp yield of 37.7%. The alpha-cellulose and pentosan contents of the purified pulp was 95.5 and 2.5%, and its viscosity was 16.3 cp.

At an industrial laboratory, the two sulphite pulps and the two sulphate pulps purified by hot alkaline extraction were acetylated satisfactorily and made into yarn. The experimental cellulose acetate yarns obtained were as strong as yarn made from a commercial pulp of acetylation grade.

Evaluations of suitability for nitration and the viscose process were also obtained.

POLYAMID RESIN SUSPENSOIDS—A NEW TOOL FOR THE PAPER CONVERTER

Harold Wittcoff, M. M. Renfrew, and Fred B. Speyer

General Mills Polyamide Resins are thermoplastic condensation products of diamines and dimerized vegetable oil acids, which, for several years, have been available to the paper converter for hot melt and solution coating. They are now available in water dispersion or suspensoid form. Five types are marketed and several others are under development. The suspensoids are cationic and have an average particle size of 1 mu. They demonstrate excellent freeze-thaw resistance.

Films from the suspensoids are readily deposited. They dry rapidly; and, in order to obtain continuity, it is necessary to fuse them for a few minutes at about 120°C. The fused films demonstrate excellent resistance to water, water vapor, and to grease, as well as to dilute acid, alkali, solvents, and chemicals. The films give strong heat seals at low sealing temperatures. Furthermore, seals can be made to many surfaces including all types of paper, waxed paper, glassine, metal foils, metal, cork, asbestos, glass, coated cellophane, and other plastic films. In addition, the Polyamide Resin films demonstrate excellent resistance to blocking.

Because the suspensoids are cationic, they are compatible with polyvinyl acetate emulsions, and salutary effects are obtained from such blends. A procedure for the reversal of charge of the suspensoids is available so that they can be blended with anionic dispersions, such as natural and synthetic elastomer latices, vinyl and acrylic emulsions, rosin and wax emulsions, and casein dispersions. The suspensoids can be made compatible with most of the widely-used paper coating materials. The compatibility relationships of the suspensoids will be discussed in detail.

The important uses of the suspensoids are as highly functional coating for paper and plastic films, and as heat seal adhesives and laminants. They are also used as gloss overcoats. They are finding their way into wet stick adhesives where they provide heretofore unattainable water resistance. They show promise as beater additives, in the fabrication of wet-strength paper. They may be used in tub-sizing compositions and as pigment binders for pigment coating of paper.

Commercial coating procedure for the suspensoids will be discussed.

CASE STUDIES IN THE APPLICATION OF INDUSTRIAL STATISTICS TO PAPERMAKING, PART II

Charles A. Bicking and R. T. Trelfa

The case studies in this paper are a natural extension of the five practical applications of industrial statistics to papermaking described in Part I published in Tappi, Vol. 34, No. 8 (Aug. 1951). Following a predetermined plan these new case studies involve slightly more sophisticated statistical techniques than the earlier ones. However, the limitations of a rigorous approach to solution of problems at the operating level have been kept in mind. Any one with a moderate aptitude for mathematics or with even slight exposure to developments of the past decade in the field of statistical quality control will have no difficulty in putting to use the methods described in this paper.

Some of the pitfalls in the control chart analysis of mill data in an effort to attain process control are considered. It is pointed out how much a rational arrangement of the data depends upon intimate experience with and clear thinking about the working of a paper machine. Preparation for keeping a control chart requires a high order of ability in planning.

Another problem described is the commonly encountered one of trying to make some sense from visual examination of a material resulting in a score rather than a measurement. An example is given of an extensive program for rating the printability of several different kinds of paper.

Although every application of statistical methods involves pre-planning for the collection of data, there is a whole area of statistics, called design of experiments, which has wide application in the planning of mill investigations. A generalized plan for experimentation is presented, as follows:

1. Obtain a clear statement of the problem.
2. Collect all available background information.
3. Design the investigation.
4. Perform the experiment.
5. Analyze the data.
6. Interpret the data.
7. Prepare a report.

The operation of this plan in a simple mill investigation is described in the paper.

STARCH FORMULATIONS AND CONTROL OF STARCH VISCOSITIES

J. E. Killinger

Basic corrugating starch formulas for producing both regular and waterproof adhesives and the functions played by the various ingredients are discussed.

The functions of the carrier and raw starch portions, the various types of starches employed, and the methods of preparing the completed corrugating starch are given, with special emphasis on degree of hydration, amount of bound water, effectiveness of additives for producing water resistance, pot life, and machine speeds.

The importance of a constant viscosity tailored for the various machines is explained. Comparisons between native and converted starches with respect to viscosity stability are drawn. Effect of hydrophilic colloids is mentioned. Details for producing a chemically stabilized starch carrier are given. A brief description of mechanical equipment for controlling viscosity variations is presented.

ADVANTAGES AND DISADVANTAGES OF ONE VS. TWO STARCH SYSTEMS

E. S. Grant

The viscosity of starch paste is usually a compromise between the

ideal used for a single facer and for the double backer. There recently has been shown interest in the possibility of using two systems, one to apply a thin paste to the single facer and the other to provide a heavier paste for the double backer. In some instances this may be advantageous, in the majority, however, it is believed that the additional complications of two systems are not warranted by the results.

FLUFF, FLUTTER, FINGERLINES AND OTHER OPERATIONAL PROBLEMS

S. Drum

The operational problems of a corrugator must be specifically described because of differences in equipment, materials, and personnel. However, to solve any problem consideration must be given to: (1) realization of the problem, (2) correct analysis of difficulty (3) desire to solve it, (4) ability to handle the problem, and finally (5) the human relation aspects.

HEAT BALANCE ON A CORRUGATOR

R. T. Cassady

Not too long ago, little thought was given to the heat problems on a corrugator primarily because the operational speeds were low. Now however, with fast modern machines the mechanical problems being more or less solved, the capacity of the unit is determined by the heat transfer. It is known that the steam load will vary dependent on the running conditions and efforts should be made to determine the point where production and maximum heat transfer are in balance. Consideration should also be given to the boiler conditions as well as the piping arrangements to secure the most favorable results.

TESTING AND QUALITY CONTROL

D. P. McNelly

Other industries have found it desirable to inspect their products before they are delivered to the consumer. Most box makers are depending upon tests on finished boxes, made usually after the boxes have been shipped.

It is becoming more popular to provide inspectors in the plant, to check at each manufacturing operation, watching the boxes as they are being made in an attempt to control quality closer, and to ship a better product.

An inspector working at the end of the doublebacker using a caliper, examining the adhesion, and perhaps making a test to measure strength in some way, can help assure the quality of the board being manufactured. If these tests are supplemented by checks at the other machines, at which the boxes are being run, it should assure a better quality box for the customer.

DYE ADSORPTION ON WOOD PULP. II. RELATION OF DYE ADSORPTION TO PHYSICAL PROPERTIES OF BEATEN SULPHITE PULP

E. F. Thode, J. W. Beamesderfer, and A. J. Chase

The application of a technique of adsorption of direct dye from dilute solution to the evaluation of properties of beaten pulp fibers is described. Correlation of the specific adsorption of dye, in milligrams of dye per gram of dry pulp, with beating time and with the physical properties of handsheets is reported. The relationship of this specific dye adsorption to the external specific surface as determined by the silvering technique and the permeability technique is also reported and discussed.

It is concluded that the specific adsorption of direct dye under the experimental conditions employed is directly related to the external surface of pulp fibers.

The specific adsorption of dye in the absence of electrolyte, which has also been studied, is shown to increase with beating at a rate materially different from that found in the presence of electrolyte. Further investigation into the fundamental significance of this phenomenon is thought desirable.

(To be continued next week)

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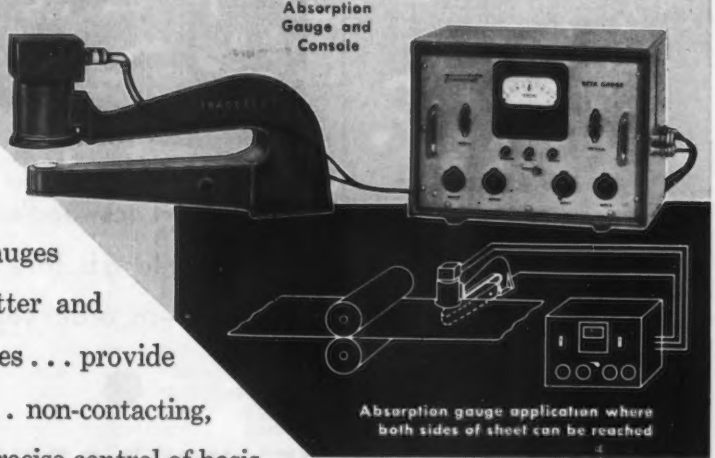

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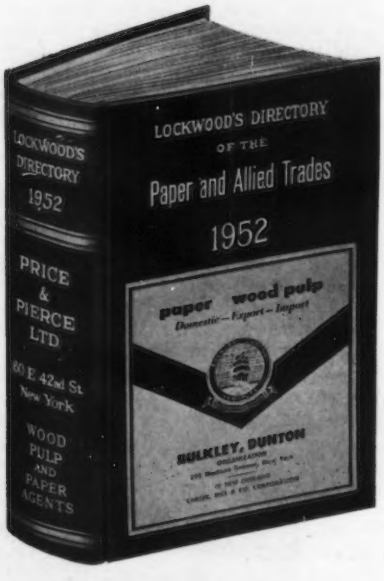

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PRICES

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Rolls, contract, per ton	$114.00/116.00
Sheets	130.00/ —

Kraft—per cwt. 50# base wgt. OPS Ceiling CPR 88

F.o.b. Southern & Western integrated mills. C.l. Freight allowed up to $10 a ton.

Standard Wrapping, ctr. rolls	$7.75/ —
Butchers, counter rolls	8.25/ —
Standard Bag, mill rolls	7.50/ —
Shipping Sack, mill rolls	7.75/ —
Gumming, mill rolls	8.00/ —
Asphalting, mill rolls	7.75/ —
Envelope, Sub. 20, mill rolls	9.25/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd.	$2.25 /$2.40
Wh. No. 1 MG	2.25 / 2.40
Wh. No. 1½	1.95 / 2.05
Wh. No. 2	1.75 / 2.00
Kraft Anti-Tar 20x30	2.12 / 2.25
White Anti-Tar 20x30	2.20 / —

Toilet— per case of 100 rolls—1M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5, 650 sheets	6.65/ —
Bleached 4½x4½	10.00/12.50
Bleached 4½x5	9.96/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$8.00/$9.75
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x4½, 2-ply	$8.95/10.37
4½x5, 2-ply	10.25/10.75

Paper Towels— per case of 3750

Wh. Jr. M'tif'd 9⅛x9⅛	$6.40
Br. Sr. M'tif'd 9⅞x12	4.40
Br. Jr. M'tif'd 9⅛x9⅞	3.90
Br. Jr. Sgl. fold 9⅞x10¼	3.95
C-Fold 10⅛ min. x 14 max.	$5.90/$6.64
Blchd. 7½x11, 48/50 rolls	$6.80/$7.92

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets	$20.55/22.55
Reg. Jute M.F. 40-lb., sheets	19.50/21.50
Printing Manila	10.50/12.00

Gummed Tape—per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$7.20 / —
60-lb. 600 ft. GSI	7.20 / —
35-lb. 800 ft. GSI	8.28 / —
35-lb. 500 ft. GSO	6.21 / —

MARKET WOOD PULP

First Quarter Contract Prices. Per Short Air-Dry Ton

	Varying freight allowances		Un Dock Atlantic Ports		
	*U. S.	Canadian	*Swedish	*Finnish	*Norwegian
Groundwood	$92.50/ —	‡$95.00/100.00			
Sulfate, Bleached	145.90/ —	190.00/200.00	$230.00/ —	$230.00/ —	$230.00/ —
Semi-bleached Sulfate	140.00/ —				
Sulfate, Unbl.	132.50/ —	145.00/175.00	200.00/ —	200.00/ —	
Sulfite, Blchd.	140.00/ —	160.00/175.00	225.00/ —	225.00/ —	225.00/ —
Sulfite, Unblchd.	132.50/ —	150.00/160.00	200.00/ —	200.00/ —	
Sulfite, Unbl'd (Glassine)		164.00/ —			
Soda, Blchd.	140.00/ —	155.00/160.00			
Sulfite Screenings	72.50/ —				
Sulfate Screenings	67.50/ —				
Groundwood Screenings	60.00/ —				
Unblchd Sulfate Sideruns	132.50/ —				
Stand. News. Sideruns	92.50/ —	106.00 —			

* OPS Ceiling, CPR 49 ‡ F.o.b. Shipping Point.

Boards Delivered plant, per ton ..... CPR 108

Filled News	$110.00/ —
Plain Chip	105.00/ —
Blchd. Mla. L-d. Chip	150.00/ —
White Pat. coated .020	175.00/ —
Kr. Liner 42 lb. M sq. ft. $2.47	117.50/ —
Kr. Corr. .009 M sq. ft. $1.59	122.50/ —
Binders Boards	137.50/140.00

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ 34.30

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$19.00/$20.50
Plain	18.40/ 19.50

Ledgers	4 Ctns.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case
	per cwt.
No. 1	$23.90/$24.65
No. 2	22.15/ 23.40
No. 3	21.90/ 22.40
Machine Coated	
No. 1	$18.40/$18.90
No. 2	16.65/ 16.90
Uncoated	
No. 1 Antique (Watermarked)	$18.65/$19.65
Offset	18.65/ 19.90
A Grade E. F.	18.10/ 19.90
A Grade S. C.	18.65/ 19.40
B Grade E. F.	18.40/ —
B Grade S. C.	17.40/ 19.15

‡ Indicates a price change.

WASTE PAPER MARKET

Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) These quotations are a partial indication of the price range in each market on the date specified, as gathered from major dealers. ALL PRICES ARE STRICTLY NOMINAL.

	New York	Philadelphia	Boston	Chicago
	Feb. 23	Feb. 23	Feb. 20	Feb. 4
No. 1 Mixed Paper	nominal	$8.00/ 10.00	$7.00/ —	$8.00/ —
No. 1 News	12.00/ 14.00	10.00/ 13.00	12.00/ 13.00	15.00/ —
Over-issue News	15.00/ 18.00	14.00/ 15.00	15.00/ 22.00	18.00/ —
Mill Wrappers	13.00/ 22.00	10.00/ 12.00	13.00/ 19.00	11.00/ —
Corrugated Containers	12.00/ 13.00	11.00/ 12.00	13.00/ —	15.00/ —
Double Kraft Ld. Corr. Cuts	40.00/ 63.00	40.00/ 50.00	40.00/ 63.00	50.00/ 63.00
100% Kraft Corr. Cuts	60.00/ 85.00	60.00/ 90.00	75.00/ 80.00	75.00/ —
Used Sugar & Flour Bags	45.00/ 50.00	40.00/ 50.00	45.00/ 46.50	50.00/ —
Super Resorted Br. Kraft	45.00/ 60.00	50.00/ 55.00	45.00/ 60.00	50.00/ —
New Br. Kraft Env. Cuts	100.00/115.00	100.00/105.00	100.00/125.00	90.00/ —
New Br. Kraft Cuts	90.00/100.00	90.00/ 95.00	85.00/105.00	80.00/ —
No. 1 Gdwd Shvs.	30.00/ 40.00	30.00/ 35.00	33.00/ 40.00	25.00/ —
White Newsblanks	55.00/ 70.00	70.00/ 75.00	55.00/ 75.00	45.00/ —
No. 1 Flyleaf Shvs.	40.00/ 55.00	50.00/ 55.00	45.00/ 70.00	50.00/ —
No. 1 Soft Wht. Shvs.	120.00/130.00	110.00/125.00	120.00/130.00	115.00/ —
Super Soft Wht. Shvs.	140.00/150.00	130.00/140.00	135.00/150.00	125.00/ —
Hd. Wht. Shvs.	140.00/150.00	150.00/160.00	145.00/165.00	130.00/ —
Hd. Wht. Env. Cuts	165.00/185.00	165.00/175.00	165.00/180.00	140.00/ —
New Manila Env. Cuts	100.00/105.00	100.00/120.00	110.00/125.00	55.00/ —
Col. Tab Cards	75.00/ 90.00	70.00/ 90.00	80.00/ 95.00	60.00/ —
Manila Tab Cards	110.00/120.00	115.00/130.00	120.00/130.00	90.00/ —
No. 1 Mixed Ledger	60.00/ 70.00	70.00/ 75.00	75.00/ 80.00	65.00/ —
White Ledger	90.00/ 95.00	105.00/110.00	95.00/110.00	80.00/ —
No. 1 Book & Mag.†	32.00/ 37.00	20.00/ 25.00	29.00/ 32.00	20.00/ —
No. 1 Rep'd. Hvy. Books‡	43.00/ 50.00	30.00/ 35.00	40.00/ 55.00	35.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood. § Deld.

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No. 1 Unblchd. Muslins	21.00
Blchd. & Unblchd. Underwears	21.00
Blchd. Canton Flannels	21.00
No. 1 Light Silesias	16.00
No. 1 Light Prints	11.50
No. 1 Blue Overalls	14.50
Suntan Khakis	11.50

Add 10% Dealer Commission

Fancy Shirts	$10.00
Indigo Blues	10.00
Mixed Khakis	8.00
Corduroys	8.00
Cottonades	8.00
No. 1 Washables	6.50

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$6.00/$6.50
Cotton Pants & Overalls	6.00/ 6.25
Thirds and Blues, Repacked	5.00/ 5.50
No. 1 Roofing Rags	1.20/ 1.25
No. 2 Roofing Rags	1.00/ 1.10
No. 3 & 4 Roofing Rags	.90/ 1.00

Bagging
(Prices to Dealers, f.o.b. N. Y.)
PRICES NOMINAL

	Per 100 lbs.
Foreign Gunny	$5.50/$6.75
Domestic Gunny, No. 1	5.50/ 6.50
Heavy Wool Tares	5.50/ 6.00
Foreign Manila Rope	9.00/ 9.25
Domestic Manila Rope	9.00/ 9.25
Jute Strings	6.00/ 6.50
No. 1 Sisal Strings	8.50/ 8.75
Paper Mill Tares	5.25/ 5.50
Foreign Scrap Burlap	5.50/ 6.50
Domestic Scrap Burlap	5.50/ 6.00
Austr. Wool Pouches	7.50/ 8.00
New Burlap Cuttings	7.00/ 7.50

MATERIAL PRICES

Aluminum sulfate:		
coml. bags, wks.....cwt.	1.65	
iron-free, c.l.	3.25	
Alcohol, ethyl:		
tax free, dms. c.l.....gal.	1.01	/ 1.05½
deld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dms.		
c.l. fit. alld.....gal.	.44	
Casein, acid prec.:		
dom. sh. pt. c.l. .....lb.	.27	/ .38
imp. ex. dock .....lb.	.20½	/ .28
Caustic soda:		
c.l. wks. solid, 76% cwt.....	3.35	
flak. & grd. 100-lb. drums...	3.75	
liquid 50% tanks....	2.55	
liquid 70% tanks....	2.65	
China clay:		
dom. air-float. c.l. wks. ton	10.00	
water-washed, lump, filler....	11.00	
coating	17.60	/30.50
imported, ex whse..short ton	15.20	/28.35
Chlorine:		
single-unit tanks, works..cwt.	2.70	
multi-unit .....cwt.	3.20	/ 4.40
Formaldehyde:		
USP, inh. dms, c.l. wks....lb.	.0625/	.0675
l.c.l., E. wks.....	.0675/	.0725
Fuel oil:		
Bunker C, No. 6 Cal. hvy.		
tanks, refinery .....bbl.	1.95	/ 2.15
light .....bbl.	2.00	/ 2.25
Hydrogen peroxide:		
USP, 35% cbys. E. of Miss. lb.	.23½	/ .26½
Lime:		
hydrated, bags, wks. .....tons	13.50	

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Rosin:		
B gum, drms, c.l. Savan..cwt.	7.00	/ 9.08*
K, M, N .....cwt.	7.67	/ 9.49*
FF, wood, do.....cwt.	6.80	/ 7.30*
* OPS Ceiling, CPR 52.		
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt. .....cwt.	6.60	/ 6.70
Salt cake:		
dom. bulk, c.l. wks.....ton	17.00	
wks. frt. all.....ton	20.00	/22.00
Soda ash:		
light, 58%, bags, wks.....	1.50	
bulk .....cwt.	1.20	
Sodium silcate, 40°:		
turbid. c.l. wks.....cwt.	1.30	/
l.c.l. wks.	1.60	/ 1.85
Sodium peroxide:		
drms. c.l. E. of Miss.....lb.	.21	
l.c.l. do. .....lb.	.21½	/ .22
Soybean, protein:		
chem. isol, wks, c.l., bags..lb. Cinn. and Chic.	.25	/ .29
Sulfuric acid:		
60° Be. cbys. c.l. wks.....cwt.	1.75	/ —
l.c.l. wks. .....cwt.	2.05	/ 2.85
Sulfur:		
crude, c.l. mines, contract, long ton	21.00	/22.00
f.o.b. vessels Gulf	22.50	/23.50
Sulfur dioxide:		
liquid, coml. cyl. wks.....lb.	.09	
multi-unit cars .....lb.	.0535	
Starches:		
pearl corn, bags, c.l. wks..cwt.	6.44	/ —
white dextrines, c.l. wks...cwt.	7.83	/ —
potato, Idaho, c.l. wks....cwt.	nominal	
potato, Maine, c.l. wks....cwt.	nominal	
tapioca, conv. dextrines...cwt.	6.75	/ 8.00
Talc:		
domestic, 50-lb. sacks, c.l. wks. .....ton	25.00	/30.00
Titanium dioxide:		
anastase, c.l. deld., bags...lb.	.21	/ .21½
l.c.l. deld. .....lb.	.22	/ .22½
rutile, c.l. deld.....lb.	.23	/ .23½
l.c.l. deld. .....lb.	.24	/ .24½

GOVERNMENT GOSPEL

(Continued from page 15)

OPS Chicago Pulpwood Meeting

Pulpwood producers from Michigan, Minnesota and Wisconsin will be given an opportunity by the Office of Price Stabilization to report their experiences in pricing under Ceiling Price Regulation 107 at an open meeting to be held at Chicago, Ill., on February 27 at 10 a.m. in the North Assembly Room of the Conrad Hilton (formerly the Stevens) Hotel.

CPR 107, which sets dollars-and-cents ceilings for pulpwood produced in the three Lake States, has been a recent subject of controversy among some of the pulpwood producers who maintain that the ceiling prices established by the regulation have resulted in lower margins of profit or in losses to certain producers.

Pulpwood producers attending the meeting will be asked to state their objections to CPR 107 and to make recommendations for possible changes, OPS said. Agency officials also will be present to explain the various provisions of the pulpwood regulation, it was announced.

If it is found practicable, OPS may form a pulpwood producers industry advisory committee for the Lake States. Names of persons eligible to serve on such a committee may be submitted at the meeting for consideration by OPS in the event the committee is formed at some future date.

Chemical Industry Cost Computation

WASHINGTON, D.C.—The chemical industry was provided with several alternate methods of computing costs under Supplementary Regulation 7, CPR 22, in an OPS amendment last week.

The amendment deals with application of the Capehart amendment, under which a manufacturer is entitled to his pre-Korea prices plus subsequent increased costs of material, labor and overhead up to July 26, 1951. Among the alternative methods to be allowed in applying the Capehart formula, said OPS, will be the provision allowing arbitrary distribution of allowable price increases among joint products and by-products of a single chemical process; another would be the authorization to manufacturers to use prices provided for in long-term sulphur contracts in computing sulphur costs; still another permits inclusion of repair and maintenance materials in the allowable increased costs.

Supplies Ease

WASHINGTON, D. C. — Aluminum packaging closure manufacturers have been advised that aluminum supplies will be easier toward the end of this year, and some other supplies will improve earlier.

While polyethylene is short now, it was reported, improved supply may make it possible to remove controls in the third quarter. The NPA is investigating a reported scarcity of coating resins for food containers.

Name J. I. Hoffman

WASHINGTON, D. C. — Appointment of Dr. James I. Hoffman, now chief of the surface chemistry section of National Bureau of Standards, as assistant chief of the Chemistry Division of the Bureau, has been announced. He is widely known for his work on the chemistry of rarer elements and analysis of iron, steel, and various minerals.

Whole Price Index Changes

Effective Friday, February 29, the U. S. Bureau of Labor Statistics has changed its wholesale price index base from 1926 = 100 to 1947-1949 = 100.

For the month of December 1951 the old index was 188.6, the new index 113.5 for wholesale all commodities.

The paper index dropped from 201.1 in December old basis to 118.4 new basis.

ASSOCIATIONS

APPA Elections

The APPA has elected the following officers and executive committee for 1952.

President, Sydney Ferguson, chairman of the board, Mead Corp.; first vice-president, D. S. Leslie, first vice-president, Hammermill Paper Co. Executive Committee—M. D. Bardeen, president, Lee Paper Co.; Alexander Calder, president, Union Bag & Paper Corp.; Hugh J. Chisholm, president, Oxford Paper Co.; R. K. Ferguson, president and chairman of the board, St. Regis Paper Co.; Hugo H. Hanson, president, W. C. Hamilton & Son; J. H. Hinman, president, International Paper Co.; J. R. Kimberly, vice-president, Kimberly-Clark Corp.; David L. Luke, Jr., president, West Virginia Pulp & Paper Co.; R. A. McDonald, chairman executive committee, Crown Zellerbach Corp.; J. L. Madden, president, Hollingsworth & Whitney Co.; Reuben B. Robertson, Jr., president, Champion Paper & Fibre Co.; Vertrees Young, executive vice-president, Gaylord Container Corp.

Writing Paper Elections

Bruce Crane, Crane & Co., Inc., Dalton, Mass., was re-elected for a second term as President of the Writing Paper Manufacturers Assn. at its 91st Annual Meeting at the Waldorf-Astoria, February 20.

J. H. Goodwin, International Paper Co., New York City, was elected Vice-President and Chairman of the Sulphite Bond Group. A. C. Remley, Nekoosa-Edwards Paper Co., is the retiring Vice-President and Chairman of the Sulphite Bond Group.

Hale Holden, Byron Weston Co., was re-elected Vice-President and Chairman of the Rag Content Paper Group.

Bruce Crane also was elected for a three-year term as the association's representative on the Board of Governors of the American Paper and Pulp Assn. succeeding H. H. Hanson, W. C. Hamilton & Sons, whose three-year term expired. G. E. O'Connor, Mohawk Paper Mills, Inc., was elected Alternate Representative.

M. C. Dobrow was re-elected Executive Secretary-Treasurer. John F. Darrow was re-elected Assistant Secretary and Miss Olive F. McGill was re-elected Assistant Treasurer.

Members elected to the Association Executive Committee representing the Rag Content Paper Group were: Hale Holden, Byron Weston Co., Chairman; M. D. Bardeen, Lee Paper Co.; F. N. Bridgham, Strathmore Paper Co.; D. K. Brown, Neenah Paper Co.; T. M. Gilbert, Gilbert Paper Co.; R. S. Madden, Valley Paper Co.; F. E. May, Rising Paper Co.; William Whiting, Whiting Paper Co.

Members elected to the Association

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Executive Committee Representing the Sulphite Bond Group were: J. H. Goodwin, International Paper Co., Chairman; W. J. Garrity, Munising Paper Co.; W. L. Jennings, West Virginia Pulp and Paper Co.; H. W. Kampf, Mead Corp.; A. C. Remley, Nekoosa-Edwards Paper Co.; David Smith, Wausau Paper Mills Co.; H. W. Suter, Jr., Champion Paper and Fibre Co.; W. B. Zimmerman, Howard Paper Mills, Inc.; J. D. Zink, Hammermill Paper Co.

In addition, the following were elected to the Association Executive Committee: H. A. Stone, Jr., Riegel Paper Corp., representative of the Bristol Board Group; G. E. O'Connor, Mohawk Paper Mills, Inc., representative of the Cover and Text Paper Group; M. Peter Schweitzer, Peter J. Schweitzer, Inc., representative of the Thin Paper Group.

An unusual feature of the Association meeting was the announcement that Sorg Paper Co. had become a member of the Century Club, by virtue of the fact that 1952 marks its one hundredth anniversary. The Century Club is composed of members of the Writing Paper Manufacturers Assn. which have been in operation 100 years or more. The following companies already have become members of the Century Club: Crane & Co., Inc., Beckett Paper Co., Curtis Paper Co., L. L. Brown Paper Co., Hurlbut Paper Co., Knowlton Brothers, Tileston & Hollingsworth Co., C. H. Dexter & Sons, Inc., Southworth Co., Smith Paper Co., and Carew Manufacturing Co.

Speakers at the meeting included Eric Sevareid, chief Washington correspondent of the Columbia Broadcasting Co., who spoke on "The Shape of Things To Come"; Bruce Crane, President of the association; N. H. Bergstrom, Chairman of the American Paper and Pulp Assn's Community Relations Committee, who spoke on the activities of that Committee; J. L. Richie, Executive Director of the U.S. Pulp Producers Assn., who spoke on "Wood Pulp: A Review, And The Outlook" and M. C. Dobrow, Executive Secretary of the Association, who presented his Annual Report.

The meeting was attended by over 125 members and guests.

Maine Surprises

Seldom do two such pleasant surprises come at the same time and place, but they did at the University of Maine Alumni Luncheon at the Biltmore. George D. Bearce, vice-president, St. Regis Paper Co., was mightily surprised to receive the Maine Pulp and Paper Foundation Award of "Outstanding Achievement."

Secondly the Maine Alumni were surprised by the announcement that the Waste Paper Institute had become a scholarship sponsor, and had made a $2500. contribution to the Foundation.

The meeting this year honored the visiting industrial lecturers of which 85 out of the total 110 were present. These lecturers from industry lecture once each week to the students on the practical problems of papermaking.

Henry J. Perry, Editor of Paper Trade Journal, reported that the first volume of lectures was out of print and that the second volume would be issued within the year.

Tissue Assn., Inc.

Newly elected Directors at Large of the Tissue Assn. are:- John J. Cahill, Ben-Mont Papers, Inc.; George C. Dunn, Dunn Paper Co.; W. F. Erisman, Erving Paper Mills; Joel S. Hartman, Barclay Tissue Corp.

Chairmen of the Product Groups:- H. G. Wintgens, Hoberg Paper Mills—Toilet Tissue; William Medoff, Sitroux, Inc.—Facial Tissue; John McKirdy, Jr., Scott Paper Co.—Paper Towels; E. E. Grant, Crystal Tissue Co.—Wrapping Tissue; James F. Suter, Roundout Paper Mills—No. 2 Wrapping Tissue; E. A. Woolwine, Brooks Paper Co.—Gift Wrapping; W. C. White, Jr., Pequannock Valley Paper Co.—Twisting Tissue; Ralph W. Burrows, Burrows Paper Corp.—Jumbo Roll; John J. Petroske, Patchogue-Plymouth Mills—Fibre Fabric.

"Carry-over" Directors at large:- Wayne A. Brown, National Paper Products Co.; Howard Gorton, Dennison Mfg. Co.; Joseph F. Meyer, Groff Paper Co.; Norman O. Seagrave, Port Hudson Sulphite & Paper Co.; Earl W. Twitchell, E. W. Twitchell, Inc.; Robert M. Young, Pond's Extract Co.; L. R. Watson, The Tuttle Press Co.; Gordon L. Ware, Straubel Paper Co.

Crocker to Address Chicago TAPPI

On March 17, Ernest C. Crocker of Arthur D. Little, Inc., will address the Chicago Section of TAPPI on "The Nature of Odor."

Mr. Crocker is the subject of recent articles appearing in the *Saturday Evening Post* and *Readers Digest* and is considered the foremost authority on odor in the country. His talk on "The Nature of Odor" will be of wide general interest. The phases of the talk bearing on paper will be of dynamic interest to all who make, convert or use paper.

This is the regular monthly dinner meeting of the Section and will be held at the Chicago Bar Assn., 29 South La Salle St., at 6:30 p.m.

Paper Napkin Assn.

Officers of the Paker Napkin Assn. are:- Chairman, B. T. Hoffmaster, Hoffmaster Paper Co., Oshkosh, Wis; Vice-chairman, Elmer Krueger, Paper Art Co., Indianapolis, Ind.; Vice-chairman, Lee Fenstermaker, C. O. Reed Co., Williamsport, Pa.

The above plus the following compose the executive committee:- J. F. Meyer, Groff Paper Co., St. Paul, Minn.; J. Wallace Moore, Crown Zellerbach Corp., San Francisco, Calif.; James Asmuth, Wisconsin Tissue Mills, Menasha, Wis.; Robert Bertram, Marathon Corp., Menasha, Wis.; Irwin Zuckerman, Hudson Pulp & Paper Corp., New York, N.Y.; Secretary is Arlo Wilson, New York.

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Chicago Corrugating Conference

The second annual corrugating conference was held by the Chicago Section of the Technical Assn. of the Pulp and Paper Industry on January 21. The afternoon and evening sessions held at the Chicago Bar Assn. featured six speakers who covered various aspects of the subject such as quality control, practical operating problems, and customer reactions. Over 130 persons were in attendance at the meeting which was presided over by Vance V. Vallandigham, of Kelco. Co., who is chairman of the TAPPI Chicago Section. G. A. Zinkil, special representative, Central Fibre Products Co., Quincy, Ill., was moderator of the conference which presented the following speakers and subjects:

"Component Materials Required," by G. A. Farrah, assistant to the vice-president, National Container Corp., Tomahawk, Wis.

"Operation of the Corrugator," by R. T. Cassady, vice-president, The Jackson Box Co., Cincinnati, Ohio.

"Quality Control in the Box Shop," by M. L. Hamilton, technical superintendent, Container Corp. of America, Chicago.

"How Costly is it to Operate Your Modern Equipment With Horse and Buggy Methods of Handling Steam?" by Paul Harrison, president, Velocity Steam Production Engineering, Inc., Chicago.

"Technical Personnel is Expensive," by Harry J. Bettendorf, president and editorial director, *Fibre Containers & Paperboard Mills*, Chicago.

"The Customer Speaks," by L. H. Grubbs, buyer, Johnson & Johnson Co., Chicago.

Component Material Requirements. Mr. Farrah outlined the characteristics of liner board and corrugating medium necessary to produce high quality boxes. He pointed out that appearance and performance are the two important qualities of shipping containers and that the component materials must have the proper characteristics so that these qualities can be achieved. Furthermore, the component materials must have the qualities that will help achieve efficient low cost operation in the fabrication of boxes.

With regard to liner board, properties that affect box *appearance* are weight, caliper, finish, odor, formation, ink receptivity, and cleanliness.

Liner board properties that affect box *performance* are weight, caliper, tearing strength, tensile strength, moisture resistance, scuff resistance, bursting or mullen strength, puncture resistance, ring stiffness and folding endurance.

Liner board properties that affect box *fabrication* operations are weight, caliper, tearing strength, tensile strength, moisture content and scuff resistance.

With regard to properties and characteristics of the corrugating medium, Mr. Farrah made the following points: Appearance is not too important. Weight is prescribed by Rule 41. Caliper has little effect. Rough surface tends to give a more rigid sheet. Rigidity is the prime factor especially in its effect on performance. Uniform moisture content is most important. Tensile strength and tear strength are both necessary but bursting strength doesn't seem to be too important.

Throughout his discussion Mr. Farrah emphasized that uniformity of paperboard characteristics is the most important factor involved. He pointed out that standards for physical requirements of board must be developed as a cooperative effort between the box maker and the board manufacturer, taking into consideration all the factors necessary to achieve the end result, namely, a high quality shipping container. Qualities desired in the finished container must be built into the liner board and corrugating medium components.

Operation of the Corrugator. In his talk, Mr. Cassady traced his company's reputation for good operation to good equipment which is well maintained and operated by employes who know what they are doing, who wish to do a good job, and who have the confidence and respect of management. He expressed the opinion that increased technical knowledge and control are necessary. The need for more technical knowledge was obvious, he felt, from comparison of today's price of a corrugator in the hundreds of thousands of dollars, as compared with about $27,000 some 30 years ago. Speeds of 500 feet per minute today (possibly 1,000 in the near future) indicate the same need, he said; in fact, companies will soon find it worthwhile to spend thousands of dollars just to take sheets off high speed corrugators. Such machines, although engineered to run at high speeds, will not attain the resultant economy if the educated and trained manpower isn't available.

This means that management must convey knowledge and information to personnel, so that the techniques and reasons for them are known and understood. At the same time, management must know enough about operations at the plant level to provide a practical understanding of the problems met in operation. Operating techniques which he touched upon, and which he stressed, were adequate heat, particularly at the single facer, adequate showering of component materials, glue roll parallel to corrugator roll, tight and accurate finger setting, attention to corrugator roll tooth contour, and balance moisture in the board components to prevent warping.

Quality Control in the Box Shop. In discussing this subject, Mr. Hamilton outlined the functions of quality control department as follows:

(1) Meeting the requirements as defined by the shipper, the customer, and the government.

(2) Improve and maintain efficient production by policing materials, policing waste and policing quality.

(3) Developing answers to sales problems with regard to decorative and protective coatings, special constructions, and customer complaints.

(4) Keeping abreast of new materials and equipment so that the plant may be kept at a high state of efficiency.

Mr. Hamilton pointed out that every stage of the fabricating process has its own potential hazards and that the finished box can be spoiled in process unless every effort is made to see that each operation is properly carried out. This requires a comprehensive testing program to find defects in the boxes and trace those defects back to machine adjustments, board characteristics, etc.

One of the important jobs of the quality control department is to keep up with new developments in materials, sizes, coatings, waterproofing chemicals, adhesives, inks, glue, gum tape and other materials that go into the finished box. Only by keeping pace with developments in all these fields is it possible for a box maker to maintain progress in this competitive field.

Steam System on Corrugators. Mr. Harrison first described the concept of a steam system which his company introduced for corrugators some years ago. This turned attention to the real goal of heat actually transferred to the corrugated board, as contrasted with the apparent heat of the corrugated rolls or the double backer hot plates. This is known as the Velocity system, which takes into consideration the fact that high heat transfer demands adequate steam flow at a rate in keeping with the heat to be transferred. If the heating surface is insulated by air inherent in all water or condensate films, the flow is reduced removing more than is generally recognized. He said that gas films offer 15 times the resistance and condensate films offer 60 times the resistance as the same thickness of metal wall.

Attacking this problem was a system of speeding up the steam flow by means of a control unit. Feed water

was first de-aerated as much as possible; speeded flow helped to return condensate more rapidly as well as removing air films. At the same time a pulsating action (alternation of a slightly raised and lowered steam pressure) tended to flash some condensate on heating surfaces back into steam and by turbulance to enhance the sweeping action of the stepped up steam flow. The pulsating or unsteady flow also made use of a principle familiar in electricity that an unsteady flow permits more volume to flow through a circuit than will a steady flow. The result, he said, was greater heat transfer on existing equipment so that production rates in most instances were increased substantially.

One interesting point he made was that, initially the system did not work on certain corrugators, until it was found that other faults in the equipment made it impossible to take advantage of the increased heat transfer; thus, the point made was that improved steam utilization acted as a prod for generally improved operating techniques. He then told of recent improvements made in the process, including pre-heating the feed water to 300°F.; returning condensate to the boiler at the rate of flow of the fresh steam; using techniques in fresh water feed in conjunction with any drop in boiler water level to hurry any lagging in condensate return; and interruption four times per minute by the control unit of the feed water flow. By these and other means, he believed it was possible to make a boiler do 20 percent more work. In connection with the effect on corrugators, he said that, once an operator has a machine which is delivering heat rapidly and steadily to the product, he is then ready to turn to discovery of other faults in the operation which may be inhibiting a high rate of production.

Left to right: M. L. Hamilton, Container Corp. of America; Paul Harrison, Velocity Steam Production Engineering, Inc.; Harry J. Bettendorf, Fibre Containers and Paperboard Mills; V. V. Vallandigham, Kelco Co.; G. A. Zinkil, Central Fibre Products Co.; G. A. Farrah, National Container Corp.; L. H. Grubbs, Johnson & Johnson Co.; R. L. Cassady, The Jackson Box Co.

Technical Personnel is Expensive. In developing this subject, Mr. Bettendorf traced the history of the industry from the time when corrugated boxes were first used for express shipments in about 1895, and outlined the effect of the Pridham decision in 1914. He pointed out that the regular slotted container, which still represents 70 to 90 percent of corrugated box output, was one of the vital reasons for quick growth of the corrugated box industry. The regular slotted container fits straight line production and has been the most economical box for most purposes. He gave a number of figures on the growth of the paperboard industry and showed how it has far outdistanced the growth of the pulp and paper industry in general.

The industry has now grown where corrugated value alone is over a billion dollars per year. The industry is now too prominent to avoid its responsibilities to customers, railroads and the general public for safe keeping of goods in transit. Therefore, it is necessary that an intelligent technical approach be followed so that the industry might continue its dynamic growth through greater service and better products. It was shown that every technician, to be most effective, must learn to communicate with management effectively and that management must help guide the technical attack by applying its knowledge of economic, operating and sales problems. Practically every phase of operations in the production of corrugated boxes needs to be re-examined for the purpose of developing better and more efficient and more economical methods and techniques. In conclusion it was brought out that technical personnel is expensive if it isn't properly, intelligently, and fully employed. But, when it is fully employed and is integrated with management for the best interests of the company and the industry as a whole, it is the most economical catalyst in promoting the growth and development of the industry.

The Customer Speaks. Mr. Grubbs stated that his company, Johnson & Johnson, used 2 to 3 million square feet of board per month, in the form of some 250 different types and sizes of boxes in its Chicago plant. Corrugated board ranges from non-test to 350-lb. test and with A, B, and C flutes, etc. In short, the company's wide variety of packaging needs are supplied by an equally wide variety of board and board products. In discussing the subject, Mr. Grubbs pointed out that the purchasing department of his company keeps in close contact with the shipping department and the claim and adjustment department to keep track of damage to products during shipping and warehousing. It doesn't matter how fine quality the product is unless it arrives at the merchant's warehouse in good condition. In general, he felt that the board and cartons purchased by his company have been of satisfactory quality. He did emphasize that one of the most important qualities in cartons for his company is uniformity. He did comment on a number of points where he thought improvement might be made.

Scoring—deeper and cleaner scoring would help make cartons square up properly and make them easier to seal

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Taping and stitching — in general, taping of cartons is satisfactory. His company utilizes palletizing as much as possible and can't use stitched joints because the double thicknesses tend to produce rocking of the cartons on the pallets, and do not produce good pallet loads. Furthermore, staples and stitching tend to scratch the product package. Mr. Grubbs wondered whether a plastic staple might not be developed for this purpose.

Design — in general the design of packaging is satisfactory. Mr. Grubbs felt that the customer should not try to design the boxes but should cooperate with the box manufacturer in this effort.

Printing—printing matter on cartons is important for two reasons: namely, advertising value and product identification. From the standpoint of advertising value he pointed out that his company turns out the best quality of products possible. It is only consistent that they want to have a good, well-printed carton in which to ship these products. Therefore, they want the printing matter on the outside of the carton to reflect the quality of the products inside. From the standpoint of products identification it is also necessary to have good printing that stands out well. Most warehouses are relatively dark and it is also dark and dingy in trucks and box cars. Errors frequently occur when it is hard for a workman to identify the product. Therefore, good bold heavy printing is necessary and desirable to prevent errors in shipping, bills of lading, etc.

He spoke of the difficulty in obtaining good heavy printing of the large display type on cartons without the finer print filling in. He emphasized that the display printing was the most important and suggested that the finer print be made larger so that a uniform readable print job will be obtained.

Johnson & Johnson's packaging applications fall into the following general classifications: tinware, including first aid kits; glassware, including bottles and jars of lotion, creams, etc.; compressible products in individual packages; compressible products in bulk. The first three classifications all give support to the shipping containers in which they are packed, and little trouble develops in the packaging of these types of items.

However, in the last classification of compressible products in bulk, the company has had some definite problems. Here, the boxes are filled over full and compressed down and the box sealed. In a few days time the material loses some of its fluffiness and shrinks to where it doesn't fill the box. Therefore, when the boxes are stacked on pallets the box walls must support the total weight of the load above. Even though the boxes are made of 200 lb. test board, the pallet loads can only be stacked two tiers high since if stacked higher the stacks will topple over. Since storage space is at a premium and there is actually enough head room for higher stacking, there is an actual loss of nearly half of the storage capacity of the warehouse on this product. Obvious answers of higher test board, added pads, lines, etc., are not possible due to management orders that cost not be increased. According to Mr. Grubbs, the above problem is typical of those frequently faced by users of boxes and the box manufacturer has an opportunity to render real service in the solution of such problems.

Syracuse Pulp and Paper Alumni 18th Annual Luncheon

For the past several years, each annual luncheon of the Pulp and Paper Alumni of the State University of New York, College of Forestry, has set a new record of attendance. The 18th annual luncheon, held February 20 in the Hendrik Hudson Room of the Roosevelt Hotel, was no exception, having the high record to date of 163.

Walter B. Morehouse of Nopco Chemical Co. was chairman of the luncheon committee which also included Lon Sutherland, Sutherland Refiner Corp.; Clark Snook, Nopco Chemical Co.; Ed Boyle, Federal Paperboard Co.; Henry Mohrer, Federal Paperboard Co.

Mr. Morehouse is president of the Pulp and Paper Section of the College of Forestry Alumni Assn. for the year 1951-52. Lon Sutherland is vice-president, and Clark Snook is secretary-treasurer of the Section. Incoming officers for the 1952-53 year are Lon Sutherland, president; Clark Snook, vice-president; and Louis G. Taylor, of Columbia-Southern Chemical Corp., secretary-treasurer.

Head table guests at the Luncheon included F. S. McManus, president of the College of Forestry Alumni Assn.; Douglas Jones, secretary of the Technical Section, Canadian Pulp and Paper Assn.; Morris Townsend, vice-president Axe Security Corp.; C. E. Libby, head of the Pulp and Paper Dept., College of Forestry; W. B. Morehouse; Fen K. Doscher, vice-president, Lily-Tulip Cup Co.; Lon Sutherland; George Pringle, vice-president, TAPPI; Scott Dowd, publisher of *Paper Industry;* Ray Hatch, 1952

CORROSION

COSTS THE PAPER INDUSTRY MILLIONS EACH YEAR

VITAL EQUIPMENT IS DESTROYED...PRODUCTS CONTAMINATED

Corrosion eats away vital equipment that today is hard to replace.

Corrosion may cause contamination of your products, resulting in unnecessary loss of production and profits.

It causes loss of output and waste of man-hours when your plant is shut down for repairs due to corrosion.

Every businessman knows this; but do you know that the total cost to American industry is $6,000,000,000 annually . . . and do you know how much corrosion increases costs in your own operations?

Perhaps the answer is Amercoat. Amercoat is a line of individualized protective coatings . . . each built to protect against a specific industrial corrosion problem.

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FOLLOW THE LINE OF *most* RESISTANCE

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L-R—R. F. Huntley, G. B. Martin and C. M. Connor, Class of '27.

TAPPI medal winner; and Clark Snook.

Members of the class of 1927 were honored at this meeting in celebration of their 25th anniversary. There are eight living members of this class as follows: C. M. Connor, W. C. Hamilton & Sons; R. E. Dick, Retired (ill health); R. F. Huntley, Cowles Chemical Co.; George B. Martin, General Dyestuff Co.; W. Leroy Neubrech, National Production Authority; Melvin N. Roberts, E. I. du Pont Co.; Arthur G. Scutt, Carborundum Co.; C. F. Young, Tecnifax Corp.

Three of this group, Bob Huntley, George Martin and "Mike" Connor, were present at the meeting, and Bob Huntley was spokesman for the group and gave a brief resume of some of the activities of the class.

OBITUARIES

William F. Bromley, 72, retired secretary and former vice-president of the Hammermill Paper Co., died suddenly February 19 at his home in Erie, Pa. Mr. Bromley retired as secretary January 1, 1945, after 31 years' service with the company.

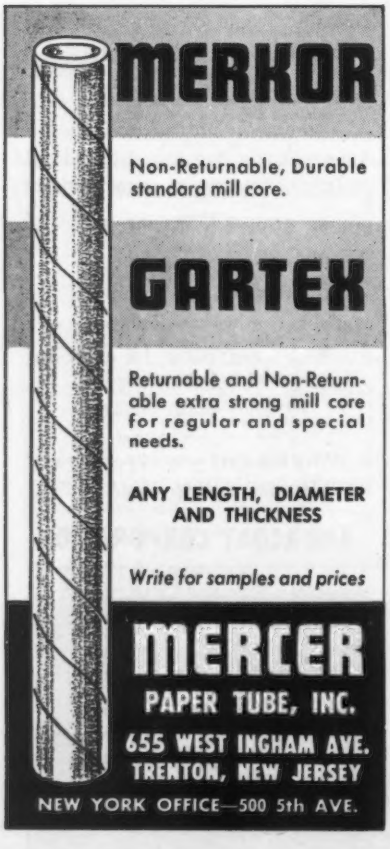
Ernest H. Chapin, 53, died of a heart attack at his home in Summit, N. J., February 16. Mr. Chapin was manager of industrial sales in New York for Foster Wheeler Corp., where he specialized in the development of new processes.

David H. G. Stenstrom, 65, one of the leading figures in the development of pulp and paper resources in British Columbia, died in Royal Jubilee Hospital, Victoria, B. C., recently.

During the war, Mr. Stenstrom served for four years as deputy newsprint administrator for the Canadian government. He joined the Celanese Corp. of America in 1947 and was adviser to the Columbia Cellulose Co. in connection with its plant at Prince Rupert. He was a key figure in the planning of the $65 million project of the Celgar Development Co., another subsidiary of the Celanese Corp., in the Arrow Lakes area at Castlegar and conferred with senior executives of the parent company in Vancouver on this project about three weeks prior to his death.

Mr. Stenstrom joined the pulp and paper industry in 1914 and became general manager of Pacific Mills Ltd. at Oceans Falls after 15 years with that company.

In 1935 Mr. Stenstrom went to Australia on a pulp project and the following year he returned to Canada and joined the St. Lawrence Paper Co. He returned to Australia in 1938 to supervise the building of a pulp mill in Tasmania. For a period following the relinquishing of his post with the Canadian government he was associated with the Powell River Co. at Vancouver.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Non-Returnable, Durable standard mill core.
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Returnable and Non-Returnable extra strong mill core for regular and special needs.
ANY LENGTH, DIAMETER AND THICKNESS
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AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Jan. 19	Jan. 26	Feb. 2	Feb. 9	Feb. 16
1952	99.3	99.5	98.1	99.3r	96.0
	Jan. 20	Jan. 27	Feb. 3	Feb. 10	Feb. 17
1951	101.3	101.0	100.2	98.4	102.1

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1951	99.3	101.3	101.9	102.8	102.2	100.1	88.6	97.7	94.3	100.6‡	98.2‡	89.3‡	98.4‡
1952	97.6‡												

‡ Preliminary.
r Revised.

COMPARATIVE YEARLY SUMMARIES

	1945	1946	1947	1948	1949	1950	1951	1952
Year to Date	87.8	95.6	104.7	100.4	94.5	93.9	100.0	97.8
Year Average	89.4	101.1	104.3	96.2	88.6	95.8	98.4‡	

PAPERBOARD OPERATING RATIOS†

	Jan. 19	Jan. 26	Feb. 2	Feb. 9	Feb. 16
1952	85	85	85	85	87
	Jan. 20	Jan. 27	Feb. 3	Feb. 10	Feb. 17
1951	104	104	103	104	105

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Ave.
1951	102	105	104	105	104	103	84	94	86	87	82	75	94
1952	81												

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.

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HELP WANTED

MEN WANTED—POSITIONS OPEN

We can place—General supt. large Fourdirnier machine paper and pulp mill; manager unbleached sulphate pulp mill; manager large newsprint mill; asst. gen. mgr. for Yankee Fourdrinier paper mill; manager wet machine board mill; supt. Cylinder board mill; general supt. sulphite pulp and paper mill; supt. Fourdrinier mill on fine lightweight papers; asst. supts.; personnel and training directors.

Chemists and chem. engineers with or without degrees (several); supt. finishing large specialty paper mill; Cylinder, Fourdrinier and Yankee Fourdrinier machine foremen; salesmen to sell paper, also mech. equipment.

Master mechanics, plant engineers, designers and draftsmen, salary up to $12,000; Mitcherlich sulphite cooks and Kamyr machine operators; industrial and time study engineers; machine tenders and back tenders.

LIST YOUR CONFIDENTIAL APPLICATION WITH US to keep informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, INC.
294 Washington St., Boston 8, Mass.

SPECIALISTS IN PLACING AND IN SUPPLYING PULP AND PAPER MILL EXECUTIVES

F-29

NEW SOUTH AMERICAN BOARD MILL
American Owned and Operated
WANTS
BOSS CYLINDER MACHINE TENDER

very experienced, familiar with all types board made on cylinder machine, also stock preparation. Excellent living accommodations. Pay no American income tax. Contract for one or two years. State age, experience, date of availability to Brown Paper Mill Co., Inc., Monroe Louisiana. F-29

Personnel Service Associates

115 State St., Springfield 3, Mass.
Personnel Consultants

Confidential placement services for employers and employes in the pulp and paper industries and allied trades. Attractive positions and competent men always listed. (Administrative-technical-sales-general personnel) F-29

WORKING SUPERINTENDENT for small fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 52-76 care Paper Trade Journal. TF

ASSISTANT WORKING SUPERINTENDENT for paper and board mill in New England. Would consider machine tender with opportunity of advancement. Address Box 52-59 care Paper Trade Journal. TF

WANTED—Machinist Mechanic, capable of building and/or developing mechanical ideas of ours in sanitary tissue and wadding field. Wonderful opportunity for capable ambitious man for permanent, better paying position. Address Box 52-54 care Paper Trade Journal. F-29

WANTED—MASTER MECHANIC—practical engineer to supervise plant maintenance. Pulp or paper mill background essential. Fine opportunity and desirable salary. Mill located in Massachusetts. All replies confidential. Address Box 53-73 care Paper Trade Journal. TF

POWER PLANT ENGINEER wanted to take complete charge of Power Department. Give complete information in first letter. Address Box 52-78 care Paper Trade Journal. M-14

HELP WANTED

WANTED
PRODUCTION MANAGER

for well established successful mill making wide variety of fine papers; technical education in chemical engineering and wide practical experience in all phases of fine paper manufacturing highly desirable. Unusual opportunity for the right man to secure permanent position at good salary. Address in confidence Charles P. Raymond Service, 294 Washington St., Boston. Telephone Liberty 2-6547.

F-29

BEATER ENGINEER

Fully experienced on folding boxboards. Good opportunity, steady job with plenty overtime in one machine mill. Only applications outlining full qualifications and experience will be considered.

Miami Paper Board Mills, Inc., Box 197, Int'l Airport, Miami, Fla.

M-21

Layout and Design engineer with experience in the manufacture of Pulp & Paper Machinery and equipment. Excellent locality, outstanding company and a position with a future. Eastern location. Write for application. Box 52-79 care Paper Trade Journal. F-29

Graduate Mechanical Engineer with maintenance engineering background in an integrated Pulp and Paper Mill. Excellent locality, outstanding company and a position with a future. Eastern location. Write for application. Box 52-80 care Paper Trade Journal. F-29

PLANT ENGINEER—Opportunity for qualified graduate Engineer with extensive experience in general plant engineering and operations in the Pulp and Paper Industry and particularly the kraft process. Address Box 52-2 care Paper Trade Journal. TF

SITUATIONS WANTED

FINISHING ROOM SUPERINTENDENT desires new connection. Age 48. 25 years experience on coated book, bonds and groundwood specialties. A-1 references. Address Box 52-61 care Paper Trade Journal. F-29

MECHANICAL ENGINEER — 25 years experience in administration, engineering, manufacturing and converting creped tissues and specialists, desires position in top engineering or management. Presently employed. Address Box 52-69 care Paper Trade Journal. M-7

GRADUATE MECHANICAL and Chemical Engineer desires position. 25 years experience in Pulp and Paper Mills. A-1 references. Progressive. Address Box 52-83 care Paper Trade Journal. M-7

FOR SALE

CAMERON SLITTERS

1—52" Type 9-5
1—52" Type 8-5
1—42" and 1—62" Type 6
1—32" and 1—42" Type 40-2A.
1—42" and 1—62" Type 40-1-AF.
1—62" and 1—72" 10-5.
1—62" and 1—82" Type 10.

OTHER SLITTERS

1—62" Beck Duplex Rewind Razor Blade Slitter & Rewinder. Suitable for paper and plastics.
1—50" Meisel Shear Cut, Series OP-2.
1—62" Type AA Langston Shear Cut.
1—30" Langston Type A Shear Cut.
1—42" Kidder Merchant Model Pneumatic Control Shear Cut.
1—40" Hobbs Shear Cut, duplex rewind, with AC motor.

POWER PAPER CUTTERS

8—Seybold, 50" Precision, 65" 6Z, 44", 63" and 74" 20th Century; 48" and 55" Holyoke; 74" Dayton.
5—Oswegos, 32", 38", 44", 50" and 55".
5—Sheridans, 34", 36", 40", 50" and 55" & 1—32" Perfection Model.
1—Dexter 50".
5—Acme, 32", 34", 36", 46" and 50".
1—Smith & Winchester Undercut 63".

MISCELLANEOUS MACHINES

1—36" Hudson-Sharp A-2 3 color Aniline Printing Press, with 4-A Sheeter. Roll to roll or roll to sheet.
1—24" Schultz Automatic Waxed and Shelf Roll Machine. Rewinds 25' to 250'.
1—6½" and 1—21" four unit Champlain Rotogravure Presses
1—72" Hudson-Sharp 25W Winder for Waxed and Household paper rolls.
1—34" Waldron Gummed Paper Breaker.
1—40" Special roll to roll coater or Lacquer saturator.
1—48" Waldron Roll to Roll Lacquer Coater
1—42" Waldron, 2 Roll, Roller Coater. Puts 2 coats on both sides of web at one time or any combination. Applies any material to paper, cellophane, plastics, etc.
1—Weber 5AG Grocery Bag Machine. Range 4¼x10¼ to 7¾x19¼.
1—2 color 36x60" Kidder Roll to Roll Press, with Rotary Punching attachment
1—Sheridan Die Press, Model 8B Platen 33" x 46". Automatic Feeder.
1—52" Waldron Anti-friction Embossing Machine with Slitting attachment.
1—30" Bagprint 3-color Aniline Tailprinter.
1—Kidder 36"x48" 2-color Rotary Wrapping Paper Press.
1—45" Robinson Scorer.
1—40" Hot Waxer for Carton blanks. One or two sides.
2—Potdevin Waxing Machines, 82" wide.
1—Hudson-Sharp 3-deck Napkin Machine. 17" max. width x 16½" cut-off.
1—45" and 1—48" Hamblet Rotary Sheeter.
1—64" Dillon Duplex Rotary Sheet Cutter.
1—94" Moore & White Duplex Rotary Sheet Cutter.
1—116" Model 29 Hamblet Duplex Rotary Sheet Cutter, slitting attachment, Erie automatic layboy and twelve roll backstands.
1—36", 1—50" and 1—74" Hamblet Single Rotary Sheeters with Layboys, Slitting attachments and Backstands.
2—Asphalt Laminating machines, one 70" and one 88".
1—Bird Pulp Screen. Type A-1-6-3/16. Plates cut .014".
1—APMEW Pulp Screen. Plates cut .085".
1—24" Weiner Refiner.
1—84" Carthage wood chipper, 10 knives, belt drive.
2—36" x 76" Wet Machines.
2—±2 Lannoye Pulpers.
2—2000 lb. Niagara Iron Tub Beaters.
1—108" Sandy Hill Shear Cut Double Drum Winder, rewinds 40" diameter rolls.
1—114" Sandy Hill eleven roll stack of Calenders.
1—61" Ten roll Holyoke Stack of Super Calenders.

We Want YOUR Used Equipment—
Write Us NOW

GIBBS-BROWER CO. INC.

Please address reply to Room 902
21 East 40th Street, New York 16, N.Y.
Telephone Lexington 2-5759

F-29

FOR SALE

Paper Mill in eastern state. One Fourdrinier machine, 82″ trim—50 tons per day. Paper machine, buildings, steam plant, and miscellaneous equipment all in good condition and in operation.

Box No. 52-81, care Paper Trade Journal.

M-7

ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING
PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

MACHINERY WANTED FOR OUTRIGHT PURCHASE
From a Single Item
to
A Complete Mill.

BEATERS
1—Dilts 750 lb. Iron Tub. Roll 44″ face x 50″ diameter.
1—Downingtown 1000 lb. Iron Tub. New roll 48″ face x 48″ diameter.

CALENDER ROLLS
46 Chilled Iron Rolls—Assorted sizes.

CALENDER STACKS
1—Farrel Birmingham, 5 roll, 108″ Calender Stack, with doctors, 2 rolls bored-for steam.
1—Black Clawson 90″ 7 roll with 3 spare rolls.
1—Pusey & Jones 84″ 4 roll, with doctors and drives.

CYLINDER MOLDS
1—134″ face x 36″ diameter, with stainless steel shafts.

DAMPENER
1—Valley Micromist Unit for water finish on paper—120″ deckle.

DRYERS
2—124″ face x 48″ diameter.
1—77″ face x 48″ diameter—with gear.
1—102″ face x 48″ diameter, with bearings.
3—110″ face x 42″ diameter with bearings and gears.
1—109″ face x 42″ diameter Creping Dryer.
4—42″ face x 36″ diameter, with frames, gears and bearings.
18—48″ face x 48″ diameter, with gears, bearings and steam joints.
19—127″ face x 42″ diameter.
3—116″ face x 48″ diameter.
2—103″ face x 48″ diameter.
2—116″ face x 36″ diameter, with gears and bearings.
1—110″ face x 48″ diameter.
9—New Moore & White 65″ face x 36″ diameter —with frames, gears and bearings.

EXTRACTOR ROLLS
1—Downingtown Extractor Roll 128″ face x 24″ diameter. Anti friction bearings.

FILTERS
1—Oliver Vacuum Filter, Cylinder 8′ face x 8′ 6″ diameter. Iron end vat.

FLAT SCREENS
3—6 plate Sandy Hill Roller Shoe with scrapers.
1—Sandy Hill 12 plate roller shoe.
3—Bagley & Sewall 8 plate, with scrapers and plates.
1—6 plate tailing screens with scrapers.
1—4 plate tailing screen with scraper.

HYDRAULIC PRESS
1—Thorpe 200 ton. Steam platens. 40″x40″ with pump.

JORDANS
1—#6 Miami, for motor drive.
3—Jones Majestics with base and couplings—
2—#3 Appleton with base and coupling.
1— Jones Majestic. Stainless Steel Filling.
3—E. D. Jones Pony. 3/16″ stainless steel fillings—banded sizes. Spare new fillings.
1—Smith & Winchester Standard with granite fillings.

LABORATORY EQUIPMENT
1—Nobe and Wood anti friction Jordan 13″ plug —½″ stainless steel fillings—direct connected to 10 h.p. 220/440/3 phase 60 cycle, 530 r/p.m. motor.

LAMINATOR
1—Black Clawson Duplex 65″ Laminator with 5 presses—6 dryers 36″ diameter, Unwind stands and rewind stands.

MOTORS
2—General Electric 2500 h.p. slip ring motors. 6600 volts—3 phase—60-cycle—257 r.p.m., with complete controls.
2—Westinghouse 200 h.p. 2200 volts—3 ph.—60 cycle—600 r.p.m. Synchronous speed with controls and grids.
1—Westinghouse 150 h.p. 2200 volts—3 ph.—60 cycle—580 r.p.m. with controls and grids.
1—General Electric—75 h.p.—2200 volts—3 ph.—60 cycle—430 r.p.m.
1—Allis Chalmers 30 h.p. 440 v. 660 r.p.m.
1—General Electric—25 h.p.—230 volts—3 ph.—60 cycle—300/900 r.p.m.
25 other 440 v. motors from 2 h.p. to 15 h.p.

PULP BALING PRESS
2—500 Ton Pulp Baling Presses with pumping unit and motor.

PULP EQUIPMENT
1—Mitts & Merrill #17 Pulpwood chipper.
1—Bird ball bearing Pulp Screen. Practically new. Used 6 months.
2—APMEW Ball Bearing Pulp Screens—30 ton capacity—outward flow.
1—D. J. Murray 10′ x 25′ Barking Drum.

PULPERS
2—#2 Lannoye.

PULPWOOD GRINDER
1—Roberts Grinder for 4′ wood, with stone and 2500 h.p. motor, with controls. New 1947. Used 6 months.

PUMPS
1—New Worthington—bronze filled. 10,000 g.p.m., 35′ head, with extended base for motor — spare new impeller.
44—Centrifugal Pumps, open & closed impellers. Direct connected or Belt Driven. Extended base for motor. Assorted capacities and heads. Most used less than one year.

REDUCERS
1—Link Belt 40 h.p. Ratio 2.2-1, 500 r.p.m.-227 r.p.m.

REELS
1—2 bowl 106″—18″ diameter iron bowls.
1—2 bowl 94″—16″ diameter bowls.

ROLLS—PRESS, COUCH, etc.
32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS
1—#2 Bird—Copper Vat.

SAVEALLS
1—Dorr ADKA #400 complete, including vacuum pump. Will handle up to 500 g.p.m. of white water.

SCREW PRESSES
1—Valley Voith Screw Press Size 2.
1—Valley Voith Screw Press—enclosed drive.

SHEETERS
1—Hamblet 124″ Duplex Sheeter with maxim layboy—8 roll backstand—motor and starter.
1—Moore & White Simplex 114″ Sheeter with slitters—counter. Maxim layboy overlapping delivery. 8 roll backstand, motor and starter.
1—48″ Kidder Spot Sheeter.
1—84″ Duplex Dillon with 15 roll Back Stand.

SHREDDERS
1—American 37″ Hamermill, anti-friction bearing.
1—Jeffrey 26½″ Knives—7 knife rotor—6 knife bed plate. Ball bearing.

SLITTERS AND WINDERS
1—Beloit 125″ Paper Machine Slitter and Rewinder—42″ rewind.
1—Hudson Sharp 25W—66″ Wax roll slitter and rewinder. New 1947.
2—Cameron 42″ Model 6—24″ rewind.
1—Cameron 72″—Model 8—40″ rewind.
1—Beloit 80″ 2 drum, with Lewellyn Drive, shear cut slitters, backstand—34″ rewind.
1—Cameron 44″ model 9-5.

SMOOTHING PRESSES
2—New Farrel Birmingham 108″ face x 24″ diameter. Rubber covered, with ball bearings and enclosed drives.

STEAM TURBINES
1—De Laval 225 h.p. Initial pressure 140 p.s.i. Exhaust pressure 35 p.s.i. Complete with gear reducer.
1—De Laval Variable speed—375 h.p. at 135 gauge and 30 p.s.i. exhaust. Complete with gear reducer.

STOCK PUMPS
1—Shartle 10 x 20 Single Plunger Pump.
2—Beloit 8x10 Triplex.
2—Deming 7 x 8 Triplex—all bronze. New 1947. Enclosed drives.
1—Triplex—8x10. Used less than 1 year.
2—Shartle Agi-No. 13″ suction, 14″ and 4″ discharge. Anti friction bearings.

SUCTION COUCH ROLLS
2—Millspaugh 36″ diameter x 234″ drilled face with enclosed drive, water cooled bearings, 12″ suction boxes and 1 spare shell.
1—Millspaugh 92″ drilled face x 22″ diameter, with pinion gear.

SUCTION PRESS ROLLS
1—Sandusky 97″ drilled face x 14″ diameter.
1—Millspaugh 58″ face x 14″ diameter.
1—Sandusky 92″ drilled face x 22″ diameter, with pinion gear.

SUPERCALENDERS
1—Norwood 74″ 9 roll with unwind and rewind. Complete with drive and 2 spare rolls.
1—Norwood 64″ 10 roll with unwind and rewind. Complete with drive and 2 spare rolls.
1—Norwood 58″ 9 roll with unwind and rewind. Complete with drive and 2 spare rolls.

THICKENERS
1—Glens Falls Machine Co.—cylinder 62 x 48—rubber couch 20″ diameter.
1—IMPCO 62″ face x 36″ diameter. Used 2 months.

TOILET TISSUE PERFORATOR
1—Paper Converting Machine Co. Model 141 automatic 81″ Perforator, slitter and Winder —with three motors—ball bearing.

VACUUM PUMPS
2—Nash ½ H-5 Vacuum Pumps
2—Nash #3.
1—Nash #2.
1—#4 Nash Hytor.
1—#4 Nash Hytor—all bronze.

WRAPPING MACHINE
1—Morrow Stevens type IC. Package thickness ¾″ to 5″. Used 30 days.

YANKEE DRYERS
1—New Sandy Hill 100″ face x 72″ diameter, with bearings and doctor.
1—Voith 100″ face x 1′ diameter—with bearings.

WHY LIST YOUR EQUIPMENT? — WE WILL BUY IT.

FOR SALE | FOR SALE | FOR SALE

FOR SALE

41 Dryers—48″ diameter x 143″ face.
15 Dryers—48″ diameter x 132″ face.

Above complete with frames, gears and bearings.

J. J. ROSS COMPANY

250 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 5, N. J. F-29

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PAPER CONVERTERS
G. B. GOLDMAN PAPER COMPANY

Sheeting — Slitting — Rewinding — Flat Cutting
all grades of paper

BUYERS OF JOB LOT PAPER ITEMS — SALVAGE — REJECTS, SIDE RUNS — DAMAGED, ETC.

Third & Wood Streets, Philadelphia 6, Pa. Phone: Lombard 3-6714

F-29

GOVERNMENT BIDS

PROPOSALS
FOR FURNISHING

PAPER FOR THE U. S. GOVERNMENT PRINTING OFFICE

SEALED PROPOSALS will be received until 10 a.m., March 10, 1952, in the room of the Joint Committee on Printing, in the Capitol, Washington, D. C., for furnishing the paper for the public printing and binding, and blank paper for the use of the Government departments and establishments in the District of Columbia, for the term of three months, beginning April 1, 1952; deliveries to be f.o.b. Government Printing Office Warehouse, or warehouse siding, Washington, D. C. The proposals will be opened in the presence of and for the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposal. The Committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part, if, in its opinion, such action would be in the interest of the Government.

Blank proposals containing the instructions, schedules, and specifications may be obtained by addressing John J. Deviny, Public Printer, Washington 25, D. C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 15 of the instructions.

The approximate estimated quantities set forth in detail in the schedule comprise:

PAPER

2,000,000 pounds newsprint paper; 1,200,000 pounds machine-finish book paper; 100,000 pounds english-finish book paper; 3,230,000 pounds offset book paper; 350,000 pounds antique book paper; 370,000 pounds water-resistant (text) book paper; 240,000 pounds supercalendered book paper; 2,420,000 pounds coated book paper; 1,545,000 pounds mimeograph paper; 415,000 pounds duplicator copy paper; 9,685,000 pounds writing paper; 965,000 pounds map paper; 330,000 pounds manifold paper; 2,395,000 pounds bond paper; 556,000 pounds ledger paper; 645,000 pounds index paper; 295,000 pounds cover paper; 115,000 pounds manila paper; 302,000 pounds kraft paper; 250,000 sheets gummed paper; 5,000 pounds high-finish red wallet board; 65,000 pounds tagboard; 30,000 pounds manila cardboard; 40,000 sheets railroad board; 230,000 pounds wood cardboard; 80,000 pounds tan board; 6,600,000 pounds postal card paper; 50,000 sheets pressboard; 180,000 pounds newsboard; 200,000 {pounds binder's board. {pounds chestnut cover board.

By direction of the Joint Committee on Printing.

JOHN J. DEVINY,
Public Printer.

WASHINGTON, D. C.
February 18, 1952. F-29

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Rice Barton Corporation
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E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Valley Iron Works Co.
Ross, J. O., Engrg. Corp.

HOISTS
Reading Crane & Hoist Corp.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TRACTORS
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

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Black-Clawson Co.
Brown Instrument Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Johnson Corp.
Lovejoy Flexible Coupling Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

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Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
The Moore & White Co.
The Noble & Wood Machine Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOTTERS
Black-Clawson Co.
Fibre Making Processes, Inc.
Improved Paper Machinery Corp.

LABORATORY CORRUGATOR
The Noble & Wood Machine Co.
Thwing-Albert Instrument Co.

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Appleton Machine Co.
Bauer Brothers Co.
Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Dilts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
John Waldron Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

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Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

LINTER PULP
Hercules Powder Co., Inc.

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Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

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Dilts Machine Works (Kohler Systems)

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Jeffrey Mfg. Co.
Shartle Bros. Mch. Co.
The Wellman Engrg. Co.

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Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

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Bareco Oil Co.
Sun Oil Company

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Cambridge Instrument Co.
Williams Apparatus Co., Inc.

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General Electric Company
Reliance Electric & Engrg. Co.

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The International Nickel Co.

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Beloit Iron Works
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

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The Noble & Wood Machine Co.

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The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

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Hudson Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.

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Frank W. Egan & Co.
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The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

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Grinnell Company
Michigan Steel Casting Co.
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Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

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Aktivin Division, Heyden Chemical Corp.
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Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
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J. O. Ross Engrg. Corp.
Lukenweld Division
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Black Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

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Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mch. Co.
The Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
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PULLEYS
Black-Clawson Co.
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PULP CLASSIFIER
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PULP CLEANERS
Nichols Engrg. & Research Corp.

PULP STOCK VALVES
Crane Company
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Shartle Brothers Machine Co.

PULPERS
Apmew, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
Morden Machines Co.
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PULPS
Brown Company
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Nordicus, Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
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PULPSTONES
Norton Company

PULP TESTERS
Williams Apparatus Co., Inc.

PULVERIZING MILLS
Combustion Engineering-Superheater, Inc.
Jeffrey Mfg. Co.
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PUMPS
Apmew, Inc.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
DeLaval Steam Turbine Co.
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
The Kinsley Chemical Company
General Dyestuff Corp.
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RAG CUTTERS
Gibbs-Brower Company, Inc.
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RECOVERY SYSTEMS
Babcock & Wilcox Co.
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Combustion Engineering-Superheater, Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
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Ross Engineering Corp., J. O.
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REELS
The Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Downingtown Mfg. Co.
Hudson-Sharp Mch. Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg. Co.
Waldron, John, Corp.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
The Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout Waldron & Co., Inc.
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REGULATORS
Apmew, Inc.
Bird Machine Company
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Taylor Instrument Companies

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American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
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ROLLS
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
Lindsay Wire Weaving Co.
Lobdell United Co.
Edward J. McBride Co., Inc.
The Moore & White Co.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

ROLL COVERS
The Goodyear Tire & Rubber Company

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
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Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
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Black Clawson Co.
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The Sandy Hill Iron & Brass Works

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Biggs Boiler Works Co.
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ROTARY STEAM JOINTS
Johnson Corp.
The Moore & White Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

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The Goodyear Tire & Rubber Company

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B. F. Goodrich Chemical Co.

SATURATING MACHINES
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

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Simonds Saw & Steel Co.

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Fairbanks, Morse & Co.
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Bird Machine Company
Fitchburg Screen Plate Co.
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Appleton Wire Works
Appleton Machine Company
The Bagley & Sewall Company
Bird Machine Company
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Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Fibre Making Processes, Inc.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Gibbs-Brower Company, Inc.
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Bauer Brothers Co.
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Black-Clawson Co.
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American Bitumuls & Asphalt Co.
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du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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W. & L. E. Gurley
Testing Machines, Inc.
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The Dow Chemical Company
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Rohm & Haas Co.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SLITTERS
The Bagley & Sewall Company
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Dilts Machine Works
Downingtown Mfg. Co.
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Gibbs-Brower Company, Inc.
Graphic Arts International Corp.
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Jagenberg-Werke Akt. Ges.
Johnstone Engrg. & Mch. Co.
Langston Co., Samuel M.
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D. J. Murray Mfg. Co.
Rice Barton Corporation
J. J. Ross Company
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The Sandy Hill Iron & Brass Works
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Valley Iron Works Co.
Waldron Corp., John

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The Noble & Wood Machine Co.
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The Sandy Hill Iron & Brass Works
John Waldron Corp.

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Armco Steel Corp.
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U. S. Steel Corp.

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Lukens Steel Company

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Downingtown Mfg. Co.
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The Noble & Wood Machine Co.
Rice Barton Corporation
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Black Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Son Co.
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Rice Barton Corporation
The Sandy Hill Iron & Brass Works
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Beloit Iron Works

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Texas Gulf Sulphur Co.

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Valley Iron Works Co.

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American Cyanamid Company, Calco Chemical Div.
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The Appelton Machine Co.
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American Cyanamid Company, Industrial Chemicals Division
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Nopco Chemical Co.

SYNTHETIC RESINS
Rohm & Haas Co.

TAKE OFF UNITS
Dilts Machine Works (Kohler Systems)

TALC
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

TANKS
Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
B. F. Perkins & Sons, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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Testing Machines, Inc.

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Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Scott Testers Inc.
Testing Machines, Inc.

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The Appleton Machine Co.
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Dilts Machine Works
Downingtown Mfg. Co.
Improved Paper Machinery Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

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American Cyanamid Co., Calco Chemical Div.
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Titanium Pigment Co.
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Walworth Company

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Dilts Machine Works

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National Tube Co.

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Biggs Boiler Works Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

TURBINES
De Laval Steam Turbine Co.
General Electric Company

UNWINDERS
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Johnstone Engrg. & Mch. Co.
Rice Barton Corporation
John Waldron Corp.

USED EQUIPMENT
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Co.
Shartle Brothers Machine Co.

V-BELTS
Lovejoy Flexible Coupling Co.

VALVES
The Bagley & Sewall Company
Crane Company
DeZurick Shower Co.
Dilts Machine Works
Fabri Valve Co. of America
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Walworth Company

VATS
Biggs Boiler Works Co.
Black-Clawson Co.
Beloit Iron Works
Rice Barton Corporation

WASHERS
The Bagley & Sewall Company
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Improved Paper Machinery Corp.
E. D. Jones & Sons Co.
Moore & White Co.
The Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Hungerford & Terry, Inc.
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Calgon, Inc.
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.
The Permutit Company
The Sandy Hill Iron & Bass Works

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American Cyanamid Company Industrial Chemicals Division
Naugatuck Chemical Division of U. S. Rubber Co.
Rohm & Haas Co., Resinous Products Div.

WATER FILTERS
Holyoke Machine Co.
Improved Paper Machinery Corp.

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The Permutit Company

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Thwing-Albert Instrument Co.
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WATER SOFTENERS
Hungerford & Terry, Inc.
The Permutit Company
Wyandotte Chemicals Corp. Michigan Alkali Div.

WATER VAPOR CUPS
Thwing-Albert Instrument Co.

WAXING MACHINERY
Black Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WEB TENSION CONTROL
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
John Waldron Corp.

WELDING EQUIPMENT
General Electric Company
Walworth Company

WET MACHINES
The Bagley & Sewall Company
Black Clawson Company
Carthage Machine Co.
Downingtown Mfg. Co.
Improved Paper Machinery Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Pusey & Jones Company
Rice Barton Corporation
The Sandy Hill Iron & Bass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WET STRENGTHENING AGENTS
Plaskon Div. Libbey-Owns-Ford Glass Co.
Reichhold Chemicals, Inc.
Rohm & Haas Co.

WETTING AGENTS
American Cyanamid Company Industrial Chemicals Division
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Plaskon Division Libbey-Owens-Ford Glass Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp. Michigan Alkali Div.

WHITE WATER TREATING EQUIPT.
Hungerford & Terry, Inc.
The Permutit Company
The Sandy Hill Iron & Brass Works

WINDERS & REWINDERS
The Bagley & Sewall Company
Beloit Iron Works
The Appleton Machine Co.
Black Clawson Company
Kohler Systems
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mch. Co.
Jagenberg-Werke Akt. Ges.
Johnstone Engrg. & Mch. Co.
Langston Co., Samuel M.
Moore & White Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Corp.
Smith & Winchester Mfg. Co.
Waldron Corp., John

WINDING ROLL CHANGERS
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Waldron, John, Corp.

WIRE BRUSHES
M. W. Jenkins Sons, Inc.
Williams-Gray Co.

WIRE GUIDES
Black-Clawson Co.
Gilbert & Nash

WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.

INDEX TO ADVERTISERS

A

Alexander Brothers ..... —
Amercoat Corp. 39
American Bitumuls & Asphalt Co. ..... —
American Cyanamid Co., Calco Chemicals Div. ..... —
American Cyanamid Co., Industrial Chemicals Div. ..... —
American Defibrator, Inc. ..... —
American Steel & Wire Co. ..... —
Ansul Chemical Co. ..... —
Apmew, Inc. ..... —
Appleton Machine Co., The ..... —
Appleton Wire Works, Inc. ..... —
Appleton Wood Products Co. ..... —
Appleton Woolen Mills 36
APW Products Co. 14
Armco Drainage & Metal Products ..... —
Armco Steel Corp. ..... —
Armstrong Machine Works ..... —
Askania Regulator Co. ..... —
Asten-Hill Mfg. Co. ..... —

B

Babcock & Wilcox Co. ..... —
Bagley & Sewall Co. ..... —
Bahr Bros. Mfg. Co. ..... —
Bailey Meter Co. ..... —
Bareco Oil Co. 29
Barrell, Wm. L., Co. ..... —
Bauer Bros. Co. ..... —
Beloit Iron Works ..... —
Biggs Boiler Works Co. ..... —
Bird Machine Co. ..... —
Birmingham Committee of 100 ..... —
Bixby, R. W., Inc. ..... —
Black-Clawson Co. 6
Blaw-Knox Co. ..... —
Bowsher, N. P., Co. ..... —
Brown Co. ..... —
Buffalo Pumps, Inc. ..... —
Bulkley, Dunton Pulp Co. ..... —
Bunge Pulp & Paper Co. ..... —
Byron Jackson Co. ..... —

C

Caisson Wells ..... —
Calgon, Inc. ..... —
Cambridge Instrument Co. ..... —
Cameron Machine Co. ..... —
Carnegie-Illinois Steel Corp. ..... —
Carthage Machine Corp. ..... —
Chemipulp Process, Inc. ..... —
Chicago Bridge & Iron Co. ..... —
Ciba Company ..... —
Clark-Aiken Co. ..... —
Classified Advertising 41
Clearing House 41
Clinton Foods, Inc. ..... —
Columbia Steel Co. ..... —
Columbia-Southern Chem. Corp. 23
Combustion Engineering - Superheater, Inc. ..... —
Corn Products Sales Co. ..... —
Crane Co. 2
Crucible Steel Corp. of America —

D

Davis Co., Frank H. ..... —
Deitz Machine Works ..... —
De Laval Steam Turbine Co. ..... —
DeZurik Shower Co. ..... —
Diamond Alkali Co. ..... —
Dilts Machine Works 6
Dodge Manfg. Co. ..... —
Dow Chemical Co. ..... —
Dowingtown Mfg. Co. ..... —
Draper Brothers Co. ..... —
du Pont, E. I., de Nemours & Co. Electrochemical Dept. ..... —
du Pont, E. I., de Nemours & Co. Dyestuffs Dept. ..... —
du Pont, E. I., de Nemours & Co. Grasselli Chem. Dept. ..... —
du Pont, E. I., de Nemours & Co. Polychemicals Dept. ..... —
Duriron Co., The ..... —

E

Ebasco Services, Inc. ..... —
Elixman Paper Core Co. ..... —
Elwell Parker Elec. Co. ..... —
English China Clays Sales Corp. 46

F

Fabri Valve of America 45
Fairbanks-Morse & Co. ..... —
Falls Chemical Products Co. .. —
Farrell-Birmingham Co., Inc. .. —
Ferguson, The H. K., Co. .... —
Fibremaking Processes ..... —
Fitchburg Screen Plate Co. .... —

G

Gaillet & Hartig Co. ..... —
Geigy Co. 38
General Dyestuff Corp. ..... —
General Electric Co. ..... —
Gibbs Brower Co. 41
Gilbert & Nash Co. ..... —
Glidden Co. ..... —
Goldman, G. B., Paper Co. 43
Goodrich Chemical Co. ..... —
Goodrich Co., B. F. ..... —
Goodyear Tire & Rubber Co. .. —
Goslin-Birmingham Mfg. Co. .. —
Gottesman & Co. ..... —
Graphic Arts Int. Corp. ..... —
Graton & Knight Co. ..... —
Grinnell Co., Inc. ..... —
Gruendler Crusher & Pulverizer Co. ..... —
Gulf Oil Corp. ..... —
Gurley, W. & L. E. ..... —

H

Hamblet Machine Co. ..... —
Hamersley Mfg. Co. ..... —
Hardinge Co., Inc. ..... —
Hercules Powder Co. ..... —
Hermann Manfg. Co. ..... —
Heyden Chemical Corp. ..... —
Hofft Co., Inc. ..... —
Holyoke Machine Co. ..... —
Hooker Electrochemical Co. ... —
Huber, J. M., Corp. ..... —
Hubinger Co., The ..... —
Hudson-Sharp Machine Co. .... —
Hungerford & Terry, Inc. ..... —
Huyck, F. C., & Sons ..... —
Hydro-Silica Corp. ..... —

I

Improved Paper Machy. Corp. . —
International Nickel Co. ..... —
International Wire Works .... —

J

Jackson & Church Co. ..... —
Jagensberg-Werke Akt. Ges. .. —
Jeffrey Mfg. Co. ..... —
Jenkins, M. W., Sons, Inc. ... —
Johnson Corp., The ..... —
Johnson, Alvin H., & Co. ..... —
Johnstone Engrg. & Mch. Co. .. —
Jones, E. D., & Sons Co. .... —

K

Kalamazoo Tank & Silo Co. .. —
Kinsley Chemical Co. 36
Knox Woolen Co. ..... —
Koppers Co., Inc. ..... —

L

Langston, Samuel M., Co. .... —
Libbey-Owens-Ford Glass Co. . —
Lindsay Wire Weaving Co. .... —
Lobdell United Co. ..... —
Lockport Felt Co. ..... —
Lodding Engineering Co. ..... —
Lovejoy Flexible Coupling Co. . —
Lukens Steel Co. ..... —
Lyddon Co. ..... —
Lynch Corp. ..... —

M

Magnuson Products Co. ..... —
Magnus Metal Div., Nat. Lead Co. ..... —
Main, Charles T., Inc. 38
Manchester Machine Co. ..... —
Manheim Mfg. & Belting Co. .. —
Mead Sales Co., The ..... —
Meincke, A. M., & Son ..... —
Meisel Pres Mfg. Co. ..... —
Mercer Paper Tube Co. 40
Merrick Scale Co. ..... —
Michigan Steel Casting Co. 36
Midwest Fulton Machine Co. .. —
Minneapolis-Honeywell Regulator Co. ..... —
Mixing Equipment Co. ..... —
Monsanto Chemical Co. ..... —
Moore & White Co. ..... —
Moorhead Electrical Machinery Co. ..... —
Modern Machines Co. ..... —
Morey Paper Mill Supply Co. . —
Morningstar, Nicol, Inc. ..... —
Mount Hope Machinery Co. ... —
Murray, D. J., Mfg. Co. ..... —

N

Nash Engineering Co. 35
National Aluminate Corp. 3
National Aniline Div., Allied Chem. & Dye Corp. ..... —
National Starch Products, Inc. . —
National Tube Co. ..... —
Naugatuck Chem. Div., U. S. Rubber Co. ..... —
Niagara Alkali Co. 17
Nichols Engrg. & Research Co. —
Noble & Wood Machine Co. .. 36
Nopco Chemical Co. ..... —
Nordicus, Inc. 34
Norton Co. ..... —

O

O'Donoghue, Roderick ..... —
Oldbury Electro Chemical Co. . —
Oliver United Filters, Inc. .... —
Owens-Corning Fibre Glass Corp. ..... —

P

Pandia, Inc. ..... —
Parsons & Whittemore ..... —
Perkins, B. F., & Sons Co. ... —
Perkins Goodwin Co. ..... —
Petroleum Specialties Co. ..... —
Pittsburgh Piping & Equip. Co. —
Pittsburgh Plate Glass Co. .... —
Plaskon Div., Libbey-Owens-Ford —
Poirier Control Co. ..... —
Potdevin Machine Co. ..... —
Powell, William, Co. ..... —
Price & Pierce, Ltd. 44
Pulp & Paper Trading Co. ..... —
Pusey & Jones Corp., The .... —

R

Railway Supply & Mfg. Co. .. —
Raymond, Chas. P., Service, Inc. 41
Reading Crane & Hoist Co. ... —
Record Fdy. & Machine Co. ... —
Red Ray Manufacturing Co., Inc. ..... —
Reichhold Chemicals, Inc. .... —
Reidel, Gus, & Son ..... —
Reliance Elec. & Engrg. Co. ... —
Research Corp. ..... —
Restigouche Co., Ltd. ..... —
Rice Barton Research Corp. ... —
Rogers, S. C., & Co. ..... —
Rohm & Haas Co. ..... —
Roosevelt Paper Co. ...Front Cover
Roots-Connersville Blower Corp. —
Ross, J. J., Co. ..... —
Ross, J. O., Engrg. Co. ..... —
Ross Paper Machinery Co. ... 42
Rust Engineering Co. ..... —

S

Sandusky Fdy. & Mch. Co. .... —
Sandy Hill Iron & Brass Works —
Seaboard Air Line R. R. Co. . —
Shartle Bros. Machine Co. 6
Shuler & Benninghofen ..... —
Simonds Saw & Steel Co. .... —
Sinclair Refining Co. ..... —
Sirrine, J. E., Co. 43
SKF Industries ..... —
Smidth, F. L., & Co. ..... —
Smith & Winchester Mfg. Co. . —
Socony Vacuum Oil Co., Inc. .. —
Sonoco Products Co. ..... —
Spray Engineering Co. ..... —
Sprout Waldron ..... —
Stebbins Engrg. & Mfg. ..... —
Stein, Hall & Co., Inc. ..... —
Stickle Steam Specialties Co. .. —
Sun Oil Co. ..... —
Sutherland Refiner Corp. ..... —
Swenson Evaporator Co. ..... —

T

Taylor Instrument Cos. ..... —
Taylor Stiles & Co. ..... —
Tennessee Coal, Iron & R. R. Co. ..... —
Testing Machines, Inc. ..... —
Texas Co., The ..... —
Texas Gulf Sulphur Co. ..... —
Thiele Kaolin Co. ..... —
Thomas Paper Stock Co. 46
Thwing-Albert Instrument Co. . —
Tide Water Assoc. Oil Co. .... —
Timken Roller Bearing Co. .... —
Titanium Pigment Corp. 51
Torrington Co., Inc. ..... —
Towmotor Corp. ..... —
Tracerlab, Inc. 31
Trimbey Machine Works ..... —

U

Union Screen Plate Co. ..... —
United Carbon Co., Inc. ..... —
United States Steel Export Co. —
United States Steel Supply Co. —
U. S. Rubber Co. ..... —
U. S. Steel Co. ..... —

V

Valley Iron Works Co. ..... —
Vanderbilt, R. T., Co. 8
Vaughan, Frank C. 38
Virginia Smelting Co. ..... —

W

Waldron, John, Corp. ..... —
Wallace & Tiernan Co. ..... —
Walworth Co. ..... —
Warren Steam Pump Co. ..... —
Waterbury Felt Co. ..... —
Weber, H. G., & Co., Inc. .... —
Wellman Engineering Co. ..... —
West Disinfecting Co. ..... —
Western Precipitation Corp. .. —
Westinghouse Electric Corp. .. —
West Virginia Pulp & Paper Co. 44
Weyerhaeuser Timber Co. .... —
Wheeler Roll Co. ..... —
Whiting Corp. ..... —
Williams Apparatus Co. ..... —
Williams Gray Co. ..... —
Wisconsin Wire Works ..... —
Wood Alan, Steel Co. ..... —
Worthington Pump & Machy. Corp. ..... —
Wyandotte Chemicals Corp. ... —

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